

THE VALLEY OF TEN THOUSAND SMOKES

An Account of the Discovery and Exploration of the
Most Wonderful Volcanic Region
in the World

BY ROBERT F. GRIGGS

DIRECTOR OF THE NATIONAL GEOGRAPHIC SOCIETY KATMAI EXPEDITIONS OF
1915, 1916, AND 1917

Having achieved the distinction of being the first explorer to ascend Mt. Katmai and study its active crater, the largest in the world, Mr. Griggs, in the GEOGRAPHIC for January, 1917, gave a detailed account of the region in Alaska affected by the explosion of this mountain, which was one of the most tremendous volcanic eruptions since the beginning of recorded history. In the present article he makes known to the members of the Society the wonders of the gigantic safety-valve area adjacent to Mt. Katmai, which he has named the Valley of Ten Thousand Smokes, discovered and explored by National Geographic Society expeditions.

WHEN the members of the Katmai Expedition of the National Geographic Society, looking through Katmai Pass, first beheld below them the Valley of Ten Thousand Smokes, it was at once evident that one of the great wonders of the world had been discovered. The first glance was enough to demonstrate that we had found a miracle of nature which, when known, would be ranked with the Yellowstone, the Grand Canyon, and other marvels, each standing without rival in its own class (see also pages 131 and 147).

But in spite of the certainty which possessed us of the magnitude and importance of our discovery, further investigation at that time was impossible. We had been equipped for the definite task of ex-

ploring Katmai and reaching the crater of the gigantic volcano from which had come the tremendous eruption of June 6, 1912, one of the most violent in history.

For the accomplishment of this purpose our outfit had proved adequate. But the equipment was entirely insufficient to permit us to extend our lines across to the Bering Sea side of the range and maintain a camp in the Valley of Ten Thousand Smokes. Moreover, the time remaining to us was too short for the task, even if we had been adequately equipped.

As recounted in the GEOGRAPHIC for January, 1917, we were compelled, therefore, to turn back, with only the scantiest evidence to substantiate the story of our truly remarkable discovery. However,



Photograph by Clarence F. Maynard
STEAM-HEATED TENTS AT THE HEAD OF THE VALLEY OF TEN THOUSAND SMOKES

"When we turned in the first night we were astonished to find that the ground under our tent was decidedly warm. On examination we found that a thermometer thrust six inches into the ground promptly rose to the boiling point. This was indeed a surprise, for the place had been only recently vacated by the retreating snowbank behind us. We put most of our bedding under us to keep us cool!"

through the generosity of the Board of Managers of the National Geographic Society, funds for another expedition were provided, and during the summer months of 1917 we were able to continue the explorations of the previous year.*

THE TEN THOUSAND SMOKES A VAST SAFETY-VALVE

When we reached Katmai Pass, in June, 1917, I saw at once that everything was just as it had been the previous year. There were the two little fumaroles which we had first found, steaming away exactly as they had been the year before. This was decidedly reassuring, for I had been tormented with the fear that after all the time and effort spent in preparation for the expedition I might find that we had seen only a passing stage in the declining activity, and when we arrived we would find the valley dead, with all its volcanoes a thing of the past.

When I got back to camp and reported the conditions, I found that some other members of the party had been secretly entertaining the opposite fear—that the whole valley was likely to blow up suddenly while we were in it!

On the contrary, all that we have seen indicates that the activity of this district, like that of the Yellowstone Park, has reached a stable stage, which will continue without much change for a relatively long

* This was the fourth expedition sent by the National Geographic Society to investigate the stupendous eruption of Mt. Katmai. The first was in 1912, led by George C. Martin, of the U. S. Geological Survey, Mr. Martin's report, with 57 illustrations, being printed in the February, 1913, number; the second was in 1915 and the third in 1916, both directed by Robert F. Griggs, of the Ohio State University, whose report was printed in the January, 1917, number of the NATIONAL GEOGRAPHIC MAGAZINE, with 52 illustrations. To appreciate the number and magnitude of the discoveries made by the National Geographic Society expeditions, members should read again these reports. Extra copies of these interesting numbers may be obtained at 25 cents each.

period. Wherever we went conditions were the same. All the vents, big and little, ~~are~~ remarkably constant in their activity.

As long as steam continues to escape in such quantities, there appears to be little probability of a recurrence of any violent explosions like those of 1912, for the present activity of the region acts as a safety-valve to relieve the pressure from below and prevent its reaching the danger point.

FIRST VIEW OF THE TEN THOUSAND SMOKE

Last year Walter, who had been keeping camp the day we discovered the valley, had listened to our accounts of its wonders with polite incredulity. I was interested to see what the effect of really seeing the valley might be on an uneducated native with no scientific interest to spur him on.

When we had examined the little fumaroles in the pass and looked at the dozen or so of others round about, he turned to me with an air of "Well, I thought so all the time," and asked, "And is this the Valley of Ten Thousand Smokes?" "Oh! No," I answered; "that is over the rise yonder."

When we reached a point where we could see on down the valley, his amazement was unbounded. "Why," he exclaimed, "a whole big valley all full of smoke!"

I had planned merely to look in and turn back, for we had come a long way—so far that he had frequently remarked on the way up how far we had come and how fast I was walking, and had even asked to rest. But once he caught sight of the valley, he must go on. It was my time to call halt now, for I was thinking of the long way back to camp. But before I could stop him he had gone a couple of miles beyond the pass. He came home with shining eyes, very much excited, and though he was very tired he kept talking to Andrean about the wonder he had seen until late into the night.

How I wished I could have understood his Russian and heard exactly what sort of an impression the valley had made. I am sure his description must have been

far more picturesque than anything I could write.

A WONDERFUL AND AMAZING SIGHT

It was indeed a wonderful and amazing sight that we looked upon, as we came into the valley from between the two lava mountains which guard the entrance. Nor had this marvel of nature lost any of its allurements in the interval that had passed since the one fleeting glimpse I had had of the phenomenon the year before.

As far as one could see down the broad flat-floored valley, great columns of white vapor were pouring out of the fissured ground and rising gracefully, until they mingled in a common cloud which hung between the mountain walls on either side. We could not see how far the activity extended, for about 5 miles down the valley the smoke had entirely closed in, cutting off any further view in that direction.

But we could look far up into the branches, which are given off to east and west from the head of the main valley. To the west the columns of steam could be seen coming out of the ground, close up to the base of the glaciers that wind down from the snowfields of Mt. Mageik, some four miles away. To the east our vision could not penetrate so far because of the prodigious activity in that quarter, where myriads of vents of all sizes were pouring forth immense quantities of smoke.

CROSSING THE MOUNTAINS AGAINST A HAIL OF PUMICE

It was four days later before all was in readiness for the whole party to go over. None of those who made that trip will ever forget it. The wind, which had been blowing uncomfortably hard for several days, freshened during the night until it began to carry away our dishes. The wind gauge in the sheltered nook we had selected for our camp showed a velocity of 25 miles per hour. Out on the mountain it was blowing twice as hard and directly in our faces. It was so strong as fairly to lift us off our feet at times; but worse than the wind itself was the hail of sharp pumice which it raised. The pumice cut like a knife whenever it struck our flesh. The others protected



SUNSET IN KATMAI PASS

Photograph by D. B. Church

The two little fumaroles to be seen at the right were the first of the millions of steam jets which the expedition discovered upon entering the majestic valley

their eyes with close-fitting goggles; but the leader could not avail himself of that relief because of the necessity of keeping to the trail, which in places was completely drifted over. Fortunately this lasted only round the shoulder of Observation Mountain, and from there on the going was comparatively easy.

We later found, however, that this was by no means an extreme wind for this region. On another occasion the men, after starting, were unable to make it and had to turn back. The wind gauge at the sheltered camp that day registered 60 miles an hour steadily, and much higher on the gusts.

MILLIONS OF VOLCANIC VENTS

When this year's party reached the valley, the effect on the men was stupendous. None had imagined anything nearly so wonderful. Every one agreed that no description could convey any conception of its immensity or grandeur.

I found that my matter-of-fact chemist was counting the smokes to see whether I had been justified in asserting that there were ten thousand of them. He soon announced that I was quite well inside the number. There are certainly many times ten thousand to be seen, even on a clear day, and when the weather is moist myriads more appear, for then the smoke from the millions of little holes whose gases ordinarily are invisible condense until there are a thousand times ten thousand.

One member of the party, who having traveled considerably and found many of the sights of the world overdrawn, was somewhat skeptical in advance about the Ten Thousand Smokes. When once he felt its thrall, however, he repeated over and over again, "Why, you couldn't exaggerate it." This statement is perfectly true. While the statistics of length, area, etc., could be falsified, the enlarged figures could no more convey any idea of the immensity of the new wonderland than can the real dimensions.

This is one of the greatest wonders of the world, if not indeed the very greatest of all the wonders on the face of the earth. The valley cannot be described; only after one has spent many days within

its confines does one begin to grasp the proportions. All of these comments were made on first sight. We had not yet really seen the valley ourselves.

OVERAWED BY THE WONDERFUL VALLEY

The sensation of wonder and admiration, which came first to all, soon gave way to one of stupefaction. The magnitude of the phenomena simply overcame us. As we moved to any corner of the valley, what we had supposed from a distance to be little fumaroles turned out monster vents, each group more wonderful a spectacle than the whole, seen in panorama, so inconceivably vast is the volcanic region.

No amount of experience seemed sufficient to enable us to grasp proportions of this enormous safety-valve.

For the first few days we were overawed. For a while we simply could not think or act in the ordinary way. At night I would curse myself, as I lay in my blankets, and make a list of the things I wanted to do the next day; but when the morning came I could not move myself to action. I could only look and gape.

Shipley, the chemist, was easily the most self-possessed of the crowd. But for him we probably would have turned around and come home without any of the scientific material we had gone to collect. After all, the whole valley is very much of a gigantic chemical laboratory, and perhaps that accounts for his greater command of himself. Yet on the third day he remarked that "he did not feel like monkeying with his little bottles of chemicals."

X— was frankly scared to death. He did what I told him, but except when told to do something he sat in a dull-eyed stupor, like one at the funeral of his sweetheart, from which no efforts of ours could rouse him. I can only guess the effort it must have cost him to go up to the fumaroles and get pictures of them. He said himself that he expected to go crazy before he got out again. He had to be relieved and sent down to the lower camp before he regained his nerve, but in the end had as good command of himself as any of us.



Photograph by D. H. Church

PUTTING THE EXPEDITION'S SUPPER ON TO BOIL IN THE NATURAL STOVE OF THE VALLEY

There was no wood nearer than 15 miles from the camp at the head of the Valley of Ten Thousand Smokes, but the difficulties of cooking were solved by making use of one of the fumaroles from which steam constantly issued. It was possible to cook anything in this fireless cooker except fried bacon and flapjacks.

I was utterly unprepared for the feelings which thus overcame me. In 1916 I had not stayed long enough in the valley to get beyond the first sensations of wonder and admiration. I had by no means grasped the situation sufficiently to report it accurately. This region should have been named "The Valley of a Million Smokes," for there are certainly not one, but several millions of them all told.

FEAR OF CAVE-INS AND FUMES

A large factor in my feelings was plain fear. Perhaps I ought in honesty to say cowardice. The spectacle was so much bigger than I remembered it that I was badly scared by the job I had undertaken. The fear which beset me was twofold: fear of cave-ins and fear of the fumes.

As we explored the margin of the valley (the worst place, as we afterward found), we could plainly hear the ground ring hollow beneath the tunks of our staffs, and more than once we felt it shake beneath our blows. What if the ground should suddenly give way beneath our feet and precipitate us into a steaming caldron?

A breath of the steam from a vent blown around us for a moment by a chance breeze gave an uncomfortable burn. We knew that if once a man fell into such a place, he would be instantly parboiled.

At first we roped up as for mountain-climbing and spread out, so that if one man went through, the others could pull him out. But when we came better to realize the conditions, we discarded the ropes, for we decided that if a man once got in it would be more merciful to leave him than to attempt to pull him out.

We had been assured by the best authority that there could be no danger from the fumes, but I had brought along a chemist partly for the express purpose of warning us as to what was not safe. I knew this valley to be different from every other place in the world, and reasoned that there could be no real basis for the assurances given me. What I feared was carbon monoxide, that colorless, odorless, tasteless gas, deadly even in concentrations as small as five parts in 10,000. It is usually present in the ema-

nations from volcanoes. There is, moreover, no simple chemical test by which its presence may be detected. What if we should get a dose of that before we were aware of the danger?

But, like practically all the bugaboos which one meets in this world, these were proved by experience to be much less dangerous than our imaginations had pictured. Experience showed that there was always plenty of air to breathe, and we found no insidious gases likely to strike one down without warning, for our noses always gave us abundant notice of dangerous places, so that we suffered no injury beyond slight headaches and temporary inconvenience.

LEARNING TO TRAVEL SAFELY

So also with the cave-ins. As we grew familiar with the conditions we built up a basis of experience that soon enabled us to pick our way with some degree of safety. The deposits brought up by the fumaroles themselves so encrust their throats and the ground round about that a thin roof over a cavern will support a man with safety.

The worst places were those where fissures had been bridged over by ash and mud, so as to leave nothing to indicate their presence. After we had been in the valley several days we had some experiences with such places that probably would have turned us back had they occurred when we first arrived.

Several times, when we accidentally put a foot through a thin place in the crust, steam came spouting out of the hole, forming a new fumarole. But it was always one foot only and the owner did not take long to get out.

Once, while walking across a place that looked perfectly solid, I noticed a new hole midway between two old fissures and on investigating found that a steaming fissure two feet wide and ten feet deep was roofed over for fifty feet by a layer of mud so thin that I could perforate it anywhere by a slight thrust with my ice-ax.

But such experiences rapidly led us to perfect a sort of technique like that of the mountain-climber, which enabled us to choose the safest paths. Moreover,



WAITING FOR SUPPER ON THE EDGE OF THE STEAM OVEN

Photograph by D. B. Church

"As the pots were surrounded by an atmosphere of live steam, just at the point of condensing, nothing ever boiled away nor cooked to pieces, and no matter how long we forgot it, nothing ever burned. Everything was always *gone exactly right*."

the first trip over the ground was the most dangerous. After one man had explored any area in safety, there was no probability of accident to those who followed.

COOKING AT A FUMAROLE

In many places the valley round about the vents is covered with a peculiar blue mud, thinly coated with a chestnut-brown crust, which sometimes supports one and sometimes gives way suddenly, letting one down to his shoe-tops in the soft, scalding mud beneath. At such times one is apt to feel that his feet are taking hold on hell in very verity, particularly if the place happens to look "ticklish" otherwise. We were surprised to find that continued immersion of our feet in such places did our shoes no perceptible injury, for we had expected that they would be rapidly eaten away.

We chose our camp well up on the mountain side overlooking the valley, close beside a melting snow-drift. Here, although we were denied the pleasure of a camp-fire, for not a stick of wood remains anywhere in the valley, we had "all the comforts of home." Fifty yards behind us was our refrigerator, where we could keep everything freezing cold until needed (see page 124).

Just in front was our cook-stove—a mild-mannered fumarole—into which we hung our pots to cook our food. We were somewhat dubious beforehand as to the feasibility of this method of cooking, because of the noxious gases that came off along with the steam; but the results were more than satisfactory. We never detected the faintest taint in any of our food. Everything was always done exactly right. Since the pots were surrounded by an atmosphere of live steam, just at the point of condensing, nothing ever boiled away, cooked to pieces, or burned, no matter how long neglected or forgotten.

There was only one drawback: while we were in the valley we had to do without our old standbys, bacon and flapjacks, for our stove would not fry. There were, however, many vents in the valley quite hot enough to fry bacon. The vapor from most of the more active ones

is so hot that the steam does not condense for some distance beyond the vents (see page 133). When a stick is poked into these the end is quickly charred, indicating a temperature considerably above the frying point.

Our thermometers did not read high enough to measure the temperatures of these vents, so we were unable to ascertain exactly how hot they were. But we did not think it advisable to try bacon and flapjacks in them, because most of them are a little too vigorous to be altogether manageable. The vapor in many cases comes out with such force that the frying pan would have had to be held down against the rising steam. A sudden puff of wind from an unexpected quarter might, moreover, have blown the steam in the cook's face and inflicted a serious burn.

A STEAM-HEATED TENT

When we turned in the first night, we were astonished to find that the ground under our tent was decidedly warm. On examination we found that a thermometer thrust 6 inches into the ground promptly rose to the boiling point. This was indeed a surprise, for the place only recently had been vacated by the retreating snowbank behind us.

We put most of our bedding under us to keep us cool!

But before long our blankets were as hot as the ground. Close to the snow-drift as we were, and at an altitude of about 2,500 feet, the air was at times quite cold; so while we steamed on one side we froze on the other. We had to keep turning over and over in the effort to equalize the temperature. We did not sleep much the first night, and all expected to "catch our death of cold."

After a few hours we discovered that the ground was not merely hot, but that invisible vapors were everywhere seeping up through the soil. The condensation of this steam from the ground made our bedding first damp and then wet, so that by morning we were in a most curious case. The sensations that greeted us on awakening in these warm, wet beds can in justice be compared only with certain distressing memories of one's childhood days, which they exactly paralleled.



Photograph by Robert F. Griggs

OUR REFRIGERATOR

Just behind the tent was an ash-covered snow-drift that made an ideal refrigerator. The only trouble was that our larder was hardly equal to the accommodations afforded.

This state of affairs worried us very much indeed, for such conditions were the worst possible for the films on which we were depending to vouch for our story. By building a sort of crib with the walking sticks we had brought from the lower camp, we managed to keep them off the floor, and so reasonably cool; but in spite of all our efforts, they showed considerable deterioration before they could be developed.

Our instruments also took up water and swelled, so that we feared we should lose everything. A tripod, which had successfully stood the climate of a tropical-rain forest, jammed so hard that it could not be hammered loose. The cameras swelled until their focal points were shifted. A panoramic outfit upon which high hopes had been built refused to work and was altogether useless for the rest of the summer.

As I saw everything thus rapidly soaking up with water, I was very much dis-

turbed over the consequences that would ensue when we should be caught in the rain; for, while our fumarole might be an ideal cook-stove, it was no good to dry clothes by. With a steamy tent there would be absolutely no way of drying our clothes after they were once wet. (Transportation was so difficult that we had brought no change of clothing.)

VAPORS OF THE VALLEY CURED
RHEUMATISM

But in all these fears I was most happily disappointed, for we found that while everything soon became steamy damp in spite of all we could do, likewise anything that got sopping wet was soon reduced to the same moist condition. When we came in soaked through and chilled after a ducking, therefore, we found that the thing to do was to crawl into our blankets, and after a while both clothes and bedding would become as "dry" as when we started out.



Photograph by Robert F. Griggs

LOOKING ACROSS THE VALLEY FROM CAMP FIVE

The cloud of white steam issuing from the vent in the background is two miles distant



Photograph by Robert F. Griggs

A VIEW OF THE FIRST WONDER OF THE WORLD, FROM CAMP FIVE, AT THE ENTRANCE TO THE GREAT VALLEY, WITH ITS MILLIONS OF STEAM JETS ALWAYS IN ACTIVE OPERATION

The main valley is more than seventeen miles in length, but a complete view is never possible, from any one vantage point, for so dense is the smoke that everything beyond five miles in any direction is hidden behind an impenetrable white pall



Photograph by Robert F. Griggs

STEAM COMING OUT ALONG THE LENGTH OF A FISSURE

"The marginal fissures usually stand open like great cracks in the surface, into which one might fall unless careful. If one tosses pebbles into the mouths of these vents they are so buoyed up by the rising gases that they are either immediately spewed out again or sink slowly down through the rising steam like feathers settling to earth" (see page 137).

In spite of the exposure to which we were daily subjected, there was not a sign of a cold or other illness in the party, but, on the contrary, the constant steaming seemed a good treatment for the rheumatic pains which usually develop on such expeditions. During our stay in the valley, and for some time after we left, we were as free from such aches as if we had taken the "cure" at a hot spring.

We came, therefore, to appreciate greatly our steam-heated tent, for we found it always warm and cozy, and there were times when the driving wind and rain outside were so bitter that we could hardly have endured the hardships otherwise.

THE WEATHER HAS MANY EVIL MOODS IN THE VALLEY

It would be a mistake, however, to suppose that with all our conveniences the

conditions of our life in the valley were altogether ideal. The Alaska Peninsula is notorious as a storm-breeder, and before the eruption Katmai Pass had a reputation for bad weather not to be matched elsewhere on the American continent. Now, with such enormous quantities of hot steam rushing into the air close beside the extensive glaciers and snow-fields of the mountains, the weather is necessarily about as bad as could be.

From the head of the valley, where conditions made it necessary for us to camp, we could often look out of our door through a storm that threatened to tear the tent from the ground and see bright sunshine and good weather five miles down the valley.

There was rain almost every day we were in the valley—not the gentle mist familiar to dwellers of southeastern Alaska, but real rain in big drops, driven



Photograph by Robert F. Griggs

ONE OF THE BIGGEST VENTS IN THE VALLEY

Some idea of the size of this great earth seam, from which perpetually roll clouds of steam, may be gained when it is realized that the two black dots, indicated by the two arrows, are men standing at the edge of the opening

before the gusty winds that penetrated everything, until our tent roof looked like a basket. How we wished to study the valley from the shelter of a house with a real roof, where we could keep things dry and contemplate the wonders of nature with some degree of personal comfort!

But in the intervals between the rains the sunshine made up for all the hardships we endured. The weather here is somewhat like the little girl with the curl: "When it is bad it is undeniably horrid, but when it is good it is so very, very good" that one straightway forgives the evil moods. Whenever the skies cleared we instantly forgot the discomforts which we had endured, and one and all gave ourselves up to admiration of the surpassing beauty which surrounded us.

Having thus established ourselves in the valley, we proceeded to prepare for the study of the many scientific problems presented by this unique place.

One of the first peculiar discoveries made by us when we arrived in the valley was the great number of dead insects around the vents, where they had been killed by flying into the live steam. Hence, therefore, came up for a few days to study the insects with the purpose of ascertaining how they get into the valley and where they breed (see page 135).

The larger animals are practically absent, but we found occasional tracks of bears, wolves, and wolverines, which had crossed the valley from one range to the other.

Most of these were old, but one day I found the tracks of a bear which had crossed during the night. I wish I could have watched him when his feet sank into the patches of soft, scalding mud that lay in his way. He must have been treated to the surprise of his life! But however he felt, he kept right on straight across the valley, without making the slightest deviation to avoid the bad places, often sinking deep into the hot mud (see page 152).

Maynard, with one of the others for assistant, toiled up to the summits day after day with 30-pound packs to secure the topographic map which is the necessary basis for all our statements of areas and sizes. His was arduous work and

the effort was often wasted, for the days when the mountain summits are perfectly clear, as is necessary for this work, are rare around mountain passes anywhere, and here especially so.

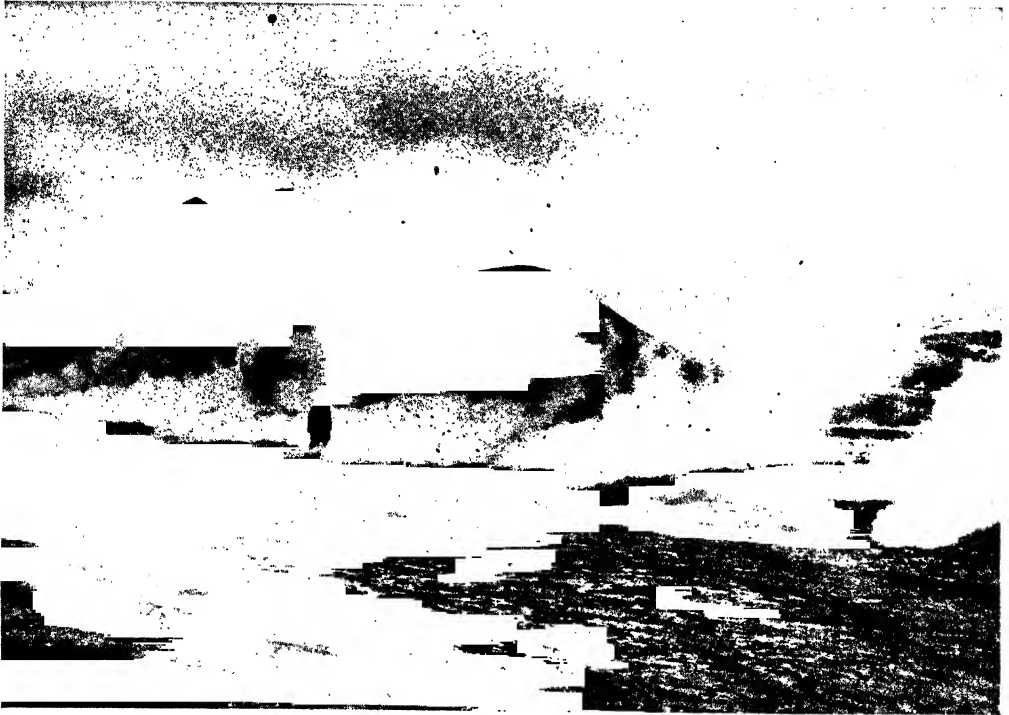
Sometimes the weather seemed to have an almost fiendish power of opposing their plans, for several times from the valley we could watch and see a thin cloud hanging all day to the very summit, on which they stood shivering, while the other mountains all around were clear. More than once it seemed as if there would not be enough clear days to complete the observations, but in the end they succeeded in getting the data for an excellent map.

PRACTICALLY ALL PLANT LIFE DESTROYED

The most disagreeable, as well as one of the most difficult, tasks fell to Shipley, who collected samples of gas from the vents for analysis, from which it is hoped to learn much about volcanoes in general and those of this district in particular. In laying out work in advance, to poke a glass tube into a vent and pump the gas into a collector sounds easy, but in the field all sorts of difficulties crop up which require great patience and resourcefulness to surmount. Apparatus will not do what is expected of it; tubes clog prematurely or snap in the heat.

Moreover, a volcano is not an easy customer to deal with at close range. When, after some trouble, one is in a position where he can get his sample, and a sudden shift of wind brings a cloud of hot, blinding gas around him, he is placed in a difficult, not to say dangerous, situation. More than once our gas collectors became lost, but fortunately the precious samples were all secured without mishap and a considerable amount of other valuable chemical work done.

Only the botanists were without employment, for in the formation of the valley all life was completely annihilated and plants are practically absent. Not quite so, however, for around some of the vents moss and algæ are beginning to start where bathed by the warm breath of the fumarole, from which they derive, beside the constant moisture, their supply of nitrogen in the form of ammonia,



Photograph by J. W. Shipley

MOUNT CERBERUS, LYING STRAIGHT ACROSS THE HEAD OF THE VALLEY, RESEMBLES A CROUCHING ANIMAL GUARDING THE ENTRANCE TO HADES

This mountain is practically surrounded by fumaroles emitting jets of steam (see also page 140)

which is given off in considerable quantity by the vents.

The beans we dropped on the "kitchen floor" near our fumarole also sprouted and grew rapidly on the warm ground, soon making a bright spot of green; but they were short lived, for the roots were killed wherever they touched the acid soil.

The absence of vegetation gave me opportunity to spend all of my leisure in studying the manifold geological problems of the place, which presents a remarkable and unique exhibition of geological forces.

A COMPLICATED SYSTEM OF SMOKING VALLEYS

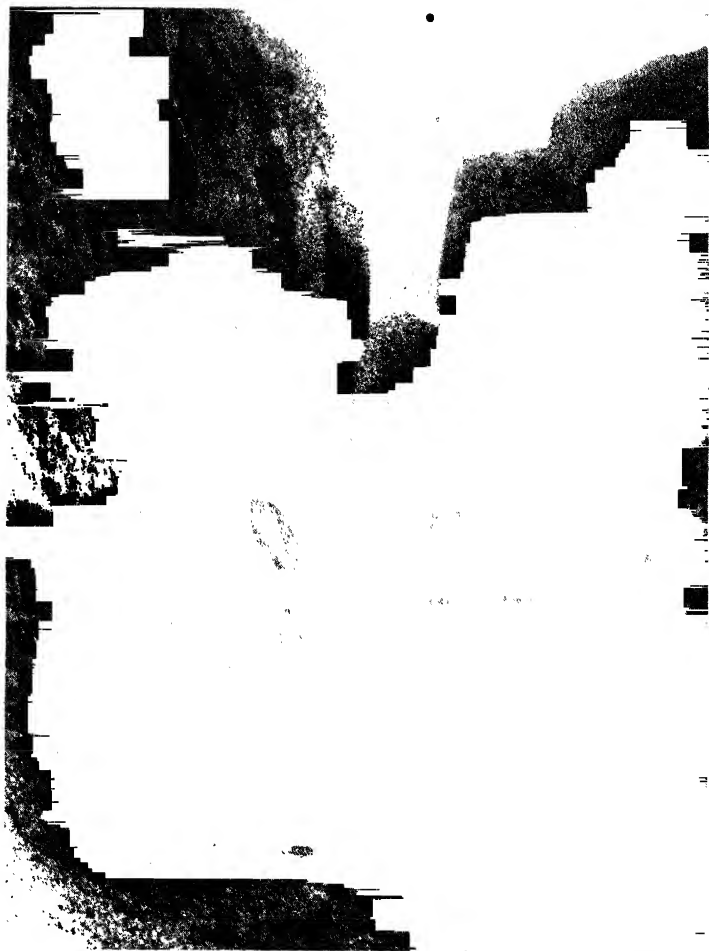
The area in which the vents occur is not a simple valley, but includes a complicated system of branches, the whole forming a tract of very irregular shape. The main line of activity extends directly transverse to the axis of the Alaska Pen-

insula from Katmai Pass northwestward toward the head of Naknek Lake. In this direction vents occur all the way down the valley as far as the bend to the north. There is clear evidence that when the steam jets burst forth this line of activity also extended straight across the pass and down through the upper valley of Mageik Creek to Observation Mountain.

As one ascends this main valley from the Bering Sea side, he sees lying straight across its head a mountain resembling a crouching animal guarding the entrance. This mountain, which we thought appropriate to call Cerberus, is practically surrounded by fumaroles, for a small branch valley runs around from the pass. In front of Mt. Cerberus the valley is very wide, sending a short branch westward under the glaciers of Mageik and another longer one to the east toward the crater of Katmai (see page 140).

In the latter branch the climax of the activity of the whole district is to be found in the two remarkable features described below—Falling Mountain and Novarupta Volcano. We were astonished to find that this branch has no head, but continues round by Mt. Katmai and back to the main valley under the slopes of Knife Peak.

The mountains, thus surrounded by a complete ring of vents, are so cut up by faults that we named them the Broken Mountains. They are bisected by a smaller branch valley, also full of vents, stretching across from Novarupta. Activity occurs in yet another branch on the opposite side of the main valley well down toward the bend. The total length of all of these smoking valleys is 32 miles. The area is 70 square miles, the average width being 2 miles.



Photograph by J. W. Shipley

EXPLORING A STEAMING FISSURE

With the steam so thick that one cannot see his way, one often wonders where he is coming out

COMPARISON WITH THE YELLOWSTONE PARK

With these dimensions at hand, it will be interesting to compare the valley with the Yellowstone Park. In the Yellowstone there are about 4,000 hot springs and a hundred geysers scattered over an area of some 3,000 square miles. The geysers, which are the most interesting feature, occur in several isolated geyser basins, whose total area is hardly 20 square miles. The largest of the geysers, which play but seldom, shoot up a column scarcely exceeding 300 feet in height. The column of Old Faithful, which is the

only geyser the tourist can count on seeing in action, is about 100 feet high.

In the Alaskan Valley there are in constant action thousands of vents whose columns exceed that figure. The columns of several of the largest vents may, when conditions are right, ascend more than 5,000 feet into the air or, under the influence of the winds which sweep the valley, trail along the ground for two or three miles.

WHY THERE ARE NO GEYSERS

One of the questions most frequently asked by persons interested in the region is whether or not there are geysers.



Photograph by Robert F. Griggs

A TYPICAL MUD CANYON IN THE VALLEY OF TEN THOUSAND SMOKES

These curious, twisting gorges, though only a few feet wide, were often 60 feet deep



Photograph by J. W. Shipley

INSPECTING THE CAVERNOUS MAW OF A GAS-EMITTING VENT

The gases from these openings are transparent until they begin to condense in the atmosphere. Therefore it is frequently possible to look into the depths of the earth for many feet.

None was observed, and the conditions are such as to make their development unlikely for the present. Geysers belong to a declining stage of volcanic activity, while the present region is in a youthful stage. A geyser consists essentially of a column of hot water mixed with steam, which is periodically projected into the air by the sudden formation of the steam from water gradually heating up to the boiling point.

A geyser can exist, therefore, only in rock cool enough to permit the accumulation of the water. The vents of this steaming valley are so hot that they would instantly vaporize any ordinary quantity of water that might find its way into them. One can readily see that if the valley cools off gradually there may come a time favorable for the formation of geysers.

To attempt any catalogue of the individual vents or any description of them would be utterly futile. They vary all the way from microscopic jets of gas to mighty columns of smoke which overtop the mountains. To explore the valley thoroughly and become acquainted with the characters of the various vents would require a residence of several months. We were continually surprised to find new and interesting features in places with which we thought we were perfectly familiar. The smokes in general, however, may be classed as coming either from craters or fissures.

THE CRATERS OF THE PLAIN

The craters are much less numerous than the fissures, but include some of the largest and most active of the vents. All of them are located in the floor of the valley, not around the edges. They average about 100 feet in diameter. The rims are slightly raised above the general level, showing that they were produced by explosive action (see page 135), but the amount of material in these crater rings is, in general, very much less than enough to fill the cavity. Within they are perfectly conical pits, sloping down into the throat at the bottom.

The steep sides, standing at the critical angle, remind one of the pits which ant lions dig in the sand. Indeed, little im-

agination is required to picture the old devil at the bottom waiting to devour whatever slips over the edge; for the sides are so nearly perpendicular that if any one made the first slip he could never get out again.

The smoke from these craters comes out in such volume that often the hole is completely filled and its outlines concealed, but by waiting a few moments at the windward side one can usually see the inside of the crater, and sometimes for an instant catch a glimpse of the throat at the bottom—usually a perpendicular tube about 10 feet in diameter leading down into the bowels of the earth. On favorable occasions one may see as much as 50 feet below the surface of the plain; but these momentary glimpses did not give us much information as to the character of the rock at that depth. We could not even be sure whether it differed from the surface mud.

Many of the craters stand apart from other vents. In other cases they are grouped together in areas with few fissures. In a few places the evident relations between craters and fissures furnish perfect models of the relations generally believed to underlie the great lines of volcanic activity that girdle the world. In such a place a long fissure has here and there thrown up craters around points of special activity, forming lines of craters standing up out of the fissure and locally obliterating it without concealing their relations to it.

In the same way such a series of volcanoes as the Aleutian chain, of which the present district is a part, are supposed to be built up around the openings from a continuous fissure in the earth's crust, extending for several hundred miles throughout the length of the chain.

THE FISSURES

Much the greater part of the steam in the valley comes to the surface, not in these craters, but through the innumerable fissures. There are readily seen to be two sets of these—bands of marginal fissures, several together, running around the edge of the valley in parallel lines, and single central fissures, which criss-cross the floor in all directions (see pages 125 and 126).



Photograph by L. G. Folsom

THE MOUTH OF A VENT IN THE SIDE OF A GUILLY

The entomologist with his bug net seems incongruous in such a place, but around some of the vents there are thousands of dead insects, killed by flying into the hot steam.



Photograph by D. B. Church

SMOKING FISSURES AT THE FOOT OF FALLING MOUNTAIN

"To convey an adequate impression of Falling Mountain, ^{the} record of a phonograph rather than of the camera would be necessary; for in a period of maximum activity there is a continuous series of bangs, thuds, and rattles, as masses of rock of all sizes are loosened from their hold and roll down the two-thousand-foot slopes of the mountain.

The marginal fissures usually stand open, like great cracks in the surface, into which one might fall unless careful. Sometimes the fissures were formed merely by the cracking open of the ground, but often they are lines of faulting, one side standing higher than the other. They are often steaming hot for long distances without a break, and at intervals contain vents from which issue some of the biggest smokes in the valley.

While the smoke from the craters comes out quietly, in vast, rolling clouds, that from the fissures often is emitted under considerable pressure, roaring and hissing. If one tosses pebbles into the mouths of these vents they are so buoyed up by the rising gases that they are either immediately spewed out again or they sink slowly down through the rising steam like feathers settling to earth. Such vents are the hottest places in the valley; the gases from them do not condense for several yards beyond the orifice (see page 127). They furnished some of the most satisfactory places for the collection of gases for analysis, because of the ease with which the collector could assure himself that his sample was free from contamination with the atmosphere.

The fissures of the central valley floor, unlike those along the margin, do not stand open, but are often recognizable only by the lines of incrustations deposited along them. Although they also contain some of the largest vents, the gas from many of them is not visible on a bright, hot day, and only during wet weather does one realize, by the long lines of little smokes he sees stretching across the valley in every direction, how much gas such fissures are continually pouring out into the air.

Naturally we were anxious to find out how deep some of these fissure were, but we could not gratify our curiosity. To sound some of the less active vents with a stone tied to a rope was easy, but this line was only 100 feet long and was too short to reach the bottom of those we tried.

The greater part of the gas given off is undoubtedly steam, but even the smaller vents contain many substances, in addition, which must have originated

deep down in the earth. In many of the larger and hotter vents the proportion of other gases increases so greatly that the emanation is changed in character and does not look like steam, but takes on a bluish cast like the smoke from the combustion of a fire. In a few cases this blueness is so pronounced as to be noticeable at a distance of several miles.

The principal cause of this blue smoke appears to be sulphur dioxide, the same gas that is given off by burning sulphur. Other factors probably coöperate in producing this appearance, but in what degree they are responsible cannot be determined until the chemical analyses are completed.

A BEWILDERING COMPLEX OF ODORS

The many substances rising through these vents result in an extremely curious combination of odors, which Dr. Shipley, with the trained nose of a chemist, thus describes:

"As we entered the valley along a deep, dry, watercourse, we observed, from time to time, a peculiar, indefinable, and not unpleasant odor. Passing close to the active vents, the odor of hydrochloric acid and hydrogen sulphide could be detected easily. From certain of the active areas a disagreeable smell, unlike any odor that we had ever encountered, arose. It was somewhat suggestive of a pigsty, a horse-stable, and sewer gas, yet we could not relate it definitely to any previously observed smell.

"Whatever the gases are, that rise from the vents in the floor of this wonderful valley, collectively they offer a considerable task to the olfactory organs in differentiating the known from the unknown. At a distance of 20 miles from the valley, one was certain one moment that the gas was sulphur dioxide which the wind bore to him, the next moment it was hydrogen sulphide, and the next, both or neither. This same elusive uncertainty clung throughout the whole period of our stay in the valley. It was only in the vicinity of a vent that the individual gases could be identified with certainty by the sense of smell."

All of the vents, even the smallest, whose fumes are too slight to be visible,



Photograph by Robert F. Griggs

THE LAVA PLUG OF NOVARUPTA FROM THE CRAVIER RIM

"Novarupta apparently began with an explosive violence, passed in this district only by Katmai itself. . . . After explosive activity had ceased there was a slow extrusion of pasty lava from the vent. This has been pushed up until it forms a great plug of lava. Its surface is covered with an indescribable confusion of fragments of all sizes, shapes, and colors. We could only guess how far it might be through this mantle of fragments to the still molten lava beneath."

incrust the mud in their vicinity with copious deposits, giving the adjacent ground a most fantastic appearance. These incrustations take on all colors imaginable and in many places give rise to very beautiful formations. The prevailing hues are perhaps those due to the gray and green and yellow alums, which build out curious crystalline structures simulating lichens growing on the ground.

DEPOSITS ALL COLORS OF THE RAINBOW

Over large areas the ground has been burned to a bright red by the heat. The variations in the intensity of the color produced are extremely beautiful, including, as they do, all shades from orange and brick red to bright cherry reds, purples, and on down to black, with occasional contrasting streaks of blue. This type of coloration is most pronounced in areas originally occupied by small fumaroles which have burned out. In places the ground has the appearance of having been burned with fire for a mile at a stretch.

Around the larger vents the ground is more commonly colored a dull pink by a deposit which cements the loose, sandy particles of ash into compact masses like concrete. In some of the largest vents such pink and red incrustations are the only ones developed, but more often spots of brilliant yellow and orange also occur in beautiful contrast with the pink ground color.

FLOWERS OF PURE SULPHUR

These yellows are mostly due, of course, to sulphur, which is very common. There are some places where one can gather crystals of sulphur, almost free from impurities, by the bushel. And up on the mountain side above the crater of Novarupta is a great yellow spot of sulphur conspicuous for miles. Sulphur occurs most often in small crystals compacted into solid cakes, but occasionally we found it lining the throat of a fumarole in long, branching, needle-like crystals (flowers of sulphur), very beautiful under a lens.

With the yellow sulphur are often deposited masses of a bright orange crystalline substance whose composition we did not know. These are generally de-

posited in the cracks of the characteristic blue mud that abounds around many of the groups of fumaroles, especially in places where there is considerable diffused activity, reaching the surface through innumerable small jets rather than by a single large vent.

Needless to say, the color combination presented by the orange and blue is as beautiful as it is unusual. In similar fumarole groups where the activity is not quite so intense the surface of the same blue mud is covered with a rich chestnut-brown crust, whose varied tones would of themselves excite the highest admiration were they not eclipsed by the other more brilliant colors.

In still other places the prevailing deposits are of a white, chalky character, recalling the geyserite of the Yellowstone Park. These white vents excel all the others in the delicacy of their coloring, for they are lightly tinged with yellow and pink, giving them a creamy, flesh-colored appearance, even more beautiful than the brilliant masses of color elsewhere developed.

In addition to all these colors, algae have formed a deep-green incrustation over the ground close up to some of the vents, in places where at first sight one would suppose the ground was too hot to permit the activities of organisms of any kind; but the insulating properties of the soil are so good that great variations in temperature may occur within a few inches.

We much desired to make accurate color studies of the characteristic deposits, but the time at our disposal was altogether too short to permit of such detailed exploration. Indeed, it should be emphasized that there is material in this wonderful valley to repay months of careful study, and that all we could do was to examine hastily the major features, leaving thousands of important seats of activity without even so much as a cursory visit.

But there are a few special features which cannot be passed by without more detailed description.

FISSURE LAKE

Across the head of the valley stands the three-peaked bulk of Mt. Mageik, smok-



Photograph by C. F. Maynard

PANORAMA OF THE VALLEY OF TEN THOUSAND SMOKE, LOOKING FROM BROKEN MOUNTAIN

From left to right: Mt. Katmai, Novarupta (see page 145), whose smoke conceals Trident and Falling Mountain (see page 141); Katmai Pass, Mt. Cerberus (low), Mt. Mageik, and Mt. Martin, whose smoke is barely visible

ing away continuously into the clouds far above. Down its sides tumble three magnificent glaciers broken to fragments by the steep descent. The tongues of all three come down to the level of the valley, where they stop abruptly without moraines, as though melted back by the heat.

Near the foot of these glaciers occurs the most conspicuous fissure to be found anywhere in the valley. It is 200 to 400 feet wide, with perpendicular walls, one of which stands about 35 feet higher than the other. The depth could not be ascertained because it is filled by a beautiful lake of clear, green water. Standing just at the foot of the glaciers, this fissure is one of the most picturesque spots in the whole valley (see page 146). Along the sides are numerous snow-drifts, from which miniature bergs break off and float away in the clear water.

WARM WATER FROM SNOW-DRIFTS

Fed by the glaciers and melting snows, Fissure Lake would be expected to be icy cold, but on the contrary it is decidedly tepid in spots, where heat evidently is received from below. One of the most amusing incidents of the whole trip occurred when our chemist, poking his thermometer into everything, discovered this fact.

I was coming along a little behind, and he, pretending to need my assistance, asked me to tell him the temperature of the water coming out from under the edge of a snow-field. Willing to answer even a foolish question, I had the words "ice cold" on the tip of my tongue when my fingers touched the water. The speaking expression froze on my face and I carefully dipped my hand in again. It was actually warm! How he did laugh at my discomfiture!

The snow-fields which surround the valley send trickling rills down the slopes, but these dry up and disappear long before the floor of the basin is reached. From the glaciers, however, comes a considerable stream, which runs, in spite of all obstacles, clear through the valley, dwindling to almost nothing before passing out of the hot area. These waters thus so nearly forget to run that we christened the stream the River Lethe.



Photograph by Robert F. Griggs

FUMARoles ALONG THE RIVER LETIE

Here is a place where one could easily cook his fish without taking it off the hook—if there were any fish to catch. In places the steam actually bubbles up through the cold water.

The appropriateness of this name is increased not only by its course, which lies through the center of Hades, but also because the uncanny waters, full of deep-brown silt from the glaciers, have a most weird aspect as they rush swirling down the valley.

WHERE YOU COULD COOK YOUR FISH
WITHOUT TAKING IT OFF THE HOOK

In many places the river cuts straight across lines of volcanic activity, and here we see how close the antagonistic elements—"fire" and water—may approach one another without disturbance. The mud, which lines the banks, is so perfect a non-conductor that within a few inches of the cold water the ground is boiling hot. There are places where the steam from small fumaroles actually boils up through the water of the river! Several good-sized vents are located on the very banks of the river.

Here one could catch a fish in the

stream and cook it without taking it off the hook—if only there were any fish, for one can hardly imagine fish frequenting this murky stream. There is, however, no real reason why they might not occur; for, in spite of the fact that the very banks are boiling hot, the waters maintain their glacial temperature of about 48° F. throughout the valley.

The climax of activity in this wonderful valley occurs in the northeast angle, toward Mt. Katmai, where there are two features of surpassing interest—Falling Mountain (see page 136) and Novarupta Volcano (see page 138).

FALLING MOUNTAIN

At first sight, Falling Mountain looks no different from other lava mountains near by, except that one face is a perfectly fresh rock cliff without any covering of ash. On account of the quantity of surrounding steam, one is not apt to notice that this rock face of the mountain



PANORAMA OF THE VALLEY OF TEN THOUSAND SMOKE, FROM BROKEN MOUNTAIN, SHOWING ESPECIALLY WELL THE "HIGH MUD MARK," AND THE GRADIENT OF THE MUD FLOW

Photograph by Clarence F. Maynard

is steaming like the ash fissures in the valley. As one comes up the valley, therefore, he will give scant notice to this mountain until his attention is forcibly drawn to it by the big fall of rocks which is sure to occur within a few minutes. Then he will turn away for a minute or two, only to have his attention brought back again by another rock fall.

After one has spent some time near the mountain and on repeated visits always hears the same thunder of the continuous rock falls, the realization gradually dawns on him that here is a feature as remarkable as any other in the valley; for when one's interest is aroused to inquire as to the cause of the phenomenon he begins to see that such a continuous series of rock falls could not be produced by any ordinary agency.

To convey an adequate impression of Falling Mountain, the record of the phonograph rather than of the camera would be necessary; for in a period of maximum activity there is a continuous series of bangs, thuds, and rattles, as masses of rock of all sizes are loosened from their hold and roll down the two-thousand-foot slopes of the mountain. Always the sound rather than the sight draws the attention, for one often has to look very hard before he can find the rocks that make the noise, so high up on the broad cliff do they start.

HUGE ROCKS SHOT FROM THE MOUNTAIN

The rocks which one is apt to see thus in a casual visit vary in size from small stones to boulders weighing several hundred pounds, but the aggregate fall in an hour reaches several tons.

At the base of the mountain are much larger masses of rock which have come down from above like the smaller ones. The largest of these is a steep-sided conical pile, measuring 500 feet in circumference, which stands out in the floor of the valley a hundred yards beyond the end of the talus slopes. There are several others nearly as large and similarly detached from the talus slopes, where most of the material lodges.

As one looks at these huge piles, made up of fragments of loose rock, dropped as though spilled from same aerial cable-way in this great mine of the gods, he



Photograph by Clarence F. Maynard
HALF WAY DOWN THE VALLEY OF TEN THOUSAND SMOKE, LOOKING TOWARD KATMAI PASS FROM AN ELEVATION ON THE EASTERN SIDE

cannot fail to wonder how they could have reached their present position. Lying, as they do, on top of the ash, they evidently have been deposited there since the eruption. As one looks around for a source, he is strongly inclined to suspect that these immense chunks were shot out from the mountain directly to their present position, without a preliminary roll down hill, which surely would have dissipated the fragments and have left a tremendous furrow behind, where they rolled across the soft mud in which they lie.

As one approaches closer to the foot of the mountain he sees other evidence which adds weight to this hypothesis. Along the base of the mountain is a deep, wide fissure, that would stop any of the rolling stones, which, indeed, seldom reach it. But beyond this fissure are many rock fragments of all sizes. Among these are also found the marks where they struck, deep cuts into the ground. Some of these are quite fresh, so that as one walks among them he watches the precipice above apprehensively, with a view of dodging any missile which may come his way.

STEAM ISSUES FROM SOLID ROCK

Some of these pieces are still solid rock, but others have completely disintegrated into small fragments since their discharge from the mountain. The appearance of these fragmented rocks is very similar to that of rocks which have spawled under great heat or broken up after the repeated effects of freezing and thawing, but the disintegration is very much more complete here than one sees in such cases. These rocks look, therefore, as if they had been broken up by forces within themselves.

When one has made this observation he looks with renewed interest on the steam escaping from the solid rock above and turns to the large piles from some of which steam is still escaping in considerable volume (see page 136). An examination seems to indicate that the steam comes from within the piles themselves, rather than from the ground beneath; but most of these are so covered with loose fragments that it is difficult to observe the origin of the steam. We



Photograph by D. B. Church

A PORTION OF THE ROCK SLIDE FROM THE SLOPES OF NOISY MOUNTAIN

Unlike Falling Mountain, one of the phenomena of the Valley of Ten Thousand Smokes, Noisy Mountain, in the upper Katmai Valley, gives off no steam, yet there is a constant rumble of falling rocks from its sides. Note the conical piles of rock in the middle distance (see page 143).

found places, however, on these piles clean of all debris, where steam could be seen issuing directly from the solid rock, just as one sees it high up on the mountain side.

If such evidence were sufficient to permit one to draw positive inferences he might conclude that Falling Mountain is really a mild sort of explosive volcano in which the explosions occur in solid rock rather than in liquid lava. But the presence of a similar active mountain in upper Katmai Valley (Noisy Mountain), from which no steam issues, would make one hesitate in drawing such a conclusion. A more critical study of these curious mountains than was possible, with our limited facilities, ought to yield valuable results.

NOVARUPTA VOLCANO *

Directly opposite the precipices of Falling Mountain lies Novarupta, the great-

* The name suggested by Mr. Folsom is here published for the first time.

est of all the vents in the valley. This, though newly formed at the time of the big eruption, is one of the world's largest volcanoes. It is, indeed, a new volcano, differing materially from most of the "new" vents that appear, in that it is not located on the top of an old volcanic mountain, which had erupted before and was in reality only dormant (see p. 138).

On the contrary, it burst through in a new place along the margin of the old volcanic complex, appearing not in igneous rock, but in sedimentary sandstone adjacent to former igneous extrusions. This vent is located not on a mountain top but in the bottom of a valley, which before the eruption gave no indication of the volcanic forces beneath.

Novarupta apparently began with an explosive violence surpassed in this district only by Katmai itself, for quantities of its pumice are scattered over an area ten miles in diameter, forming deposits in places more than fifty feet deep (see page 145). In these deposits cinders

weighing upward of a hundred pounds are frequent, and everywhere the ejecta are much coarser than the ash from Katmai, indicating that the explosions were less violent.

After the first violent outburst the activity apparently gradually diminished in intensity until most of the ejected material was thrown only a short distance, forming in its fall a circular crater ring immediately surrounding the vent. This being seven-tenths of a mile in diameter, is one of the largest explosion craters in the world, very much larger than Pelée or Vesuvius, and would be a feature of primary interest in the region were it not dwarfed by the vast crater of Katmai.

THE GREAT LAVA PLUG OF NOVARUPTA

As the explosive period drew to a close the lava became more and more pasty, until among the last stones thrown out were numerous masses of lava stiff enough to retain their shape, yet so hot that their surface is cracked open from the contraction incident to cooling, giving the characteristic "bread crust" appearance. These are the only lava "bombs" found in the Katmai district. Nowhere are there any typical bombs formed by masses of lava thrown out while still liquid and assuming a rigid spheroidal form while still in the air. Indeed, nowhere else were even "bread crust" bombs found.

After explosive activity had ceased there was a slow extrusion of pasty lava from the vent. This has been pushed up until an immense plug of lava has been formed 1,200 feet in diameter and 250 feet above the floor of the crater. The surface is covered with an indescribable confusion of fragments of all sizes, shapes, and colors, formed by the fragmentation of the lava from the strains set up by unequal contraction while cooling.

We could only guess the distance through this mantle of fragments to the still molten lava beneath. The fact should be noted that nowhere in the whole district did we see any evidence of a lava flow in connection with the present eruption. This mass of rock, which from the beginning was evidently very



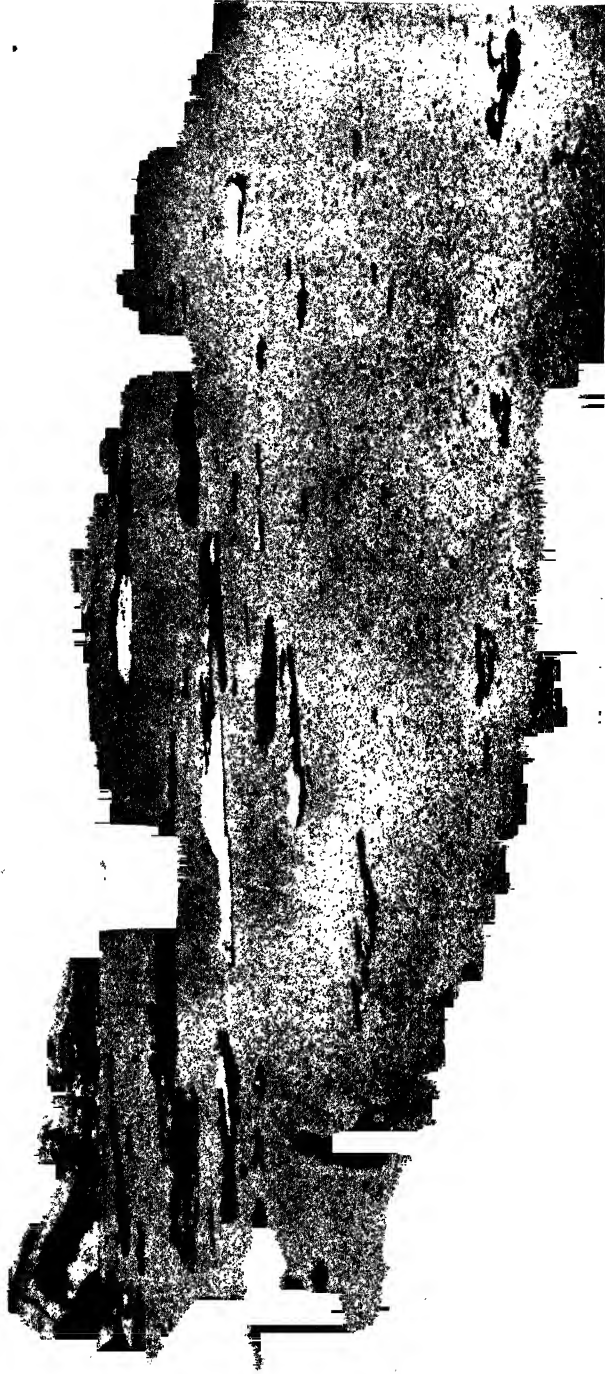
Photograph by Robert F. Griggs
A CHUNK OF PUMICE THROWN OUT BY
NOVARUPTA

So violent was the explosion of Novarupta that quantities of its pumice are scattered over an area ten miles in diameter. In these deposits, cinders weighing upward of a hundred pounds are frequent (see page 144).

pasty, is the nearest approach to molten lava to be found in this region.

That somewhere beneath the surface of this plug the lava is still molten is abundantly evidenced by the tremendous quantities of smoke continuously given off. Often this cloud fills the sky for miles, even drifting through Katmai Pass and obscuring considerable areas on the other side of the range. At other times the smoke forms an erect column as much as two miles high (see page 140).

Around Novarupta the earth is all shot to pieces with more and larger steaming fissures than are to be found elsewhere, so that only with difficulty one finds a path through the bewildering maze of vents. The climb over the rim of Nova-



Photograph by J. W. Shipley

A FUMAROLE ON THE BANK OF FISSURE LAKE

"Near the foot of three glaciers occurs the most conspicuous fissure to be found anywhere in the valley. It is 200 to 400 feet wide, with perpendicular walls, one of which stands about 35 feet higher than the other. Its depth could not be ascertained because it is filled by a beautiful lake of clear, green water. Along its sides are numerous snow-drifts from which miniature bergs break off and float away in the clear water. Filled by glaciers, one would expect Fissure Lake to be icy cold, but, on the contrary, it is decidedly tepid in spots, where it receives heat from below."

ruptured and down beside the plug of lava is the most fearsome adventure afforded to the explorer of the valley, for here there is so much steam that he is more than likely to be surrounded in a hot cloud, blown by the fickle wind. Two of the party so surrounded in this vicinity once became completely confused, disagreeing as to the way home, and finally taking the wrong course until they were set right by crossing the trail made by a previous party.

VALLEY OF TEN THOUSAND SMOKES WITHOUT A RIVAL

In order that the reader may justly estimate the status of this valley among the wonders of the world, we ought to make some comparisons with other similar regions, but in truth there is no other region with which the Valley of Ten Thousand Smokes can be compared. Niagara finds a rival in Victoria Falls. The Rotorua district of New Zealand is a competitor of the Yellowstone. The Crater of Katmai must stand comparison with Kilauea and Crater Lake.

Not so with the Valley of Ten Thousand Smokes. It is unique. *Nothing approaching it has ever been seen by the eye of man.* To find a parallel we must search the records of geology, for here we have such a volcanic outburst as the geologist finds recorded in the rocks of the past, but never before has had an opportunity to observe in the world of the present.

In the size of the vents and the quantity of smoke given off the valley is so far beyond other volcanic districts that no other place can for a moment be compared with it. Quite well within the truth, we might say that the sum total of the emanations from all the other volcanoes of the American continent, from the Aleutians to Patagonia, except during rare periods of a dangerous eruption, is much less than is given off within the radius of one's vision from the Valley of Ten Thousand Smokes.

Indeed, if one could pick up all the other volcanoes in the whole world and set them down together, side by side as close as they could stand, they would present much less of a spectacle, always excepting a period of dangerous eruption,

than does the Valley of Ten Thousand Smokes every day in the year.

THE LAST DAY IN THE VALLEY

I can never forget my last day in the valley. We had been lying in our sopping tents for two days, unable to stir outside in the blinding storms. The rest of the work was pressing, for I had already overstayed the time allotted for the valley. In the morning I had announced that we would move out that night, regardless of the weather, and had given orders for the equipment to go down. We started out for some last pictures in rain and mist which made it impossible to find our way around through the steam, but after a couple of hours there came a break.

The atmosphere cleared and disclosed the sun shining out of a blue sky, spotted with big cumulus clouds, with a light that was dazzlingly bright. I never saw the valley half so wonderful. We exposed our films as fast as we could wind them up, getting within a few hours many of our best pictures. There were a dozen showers during the day, soaking rains, too, but we utilized such intervals to travel from one group of vents to another. We came in at 6 o'clock tired out, but bent on taking out the big photographic outfit for the one grandest panorama of all. But it was too late; because of my own orders we found the camp stripped of everything we needed.

There was nothing to do but follow, so we made up our packs and reluctantly trudged out through the pass and down the other side. I almost wept as I turned for one last look at the marvelous valley, showing off now as never before, for as we came up to the divide, which we were perhaps never to cross again, a magical curtain was unrolled, as a background for the scene, in the most gorgeous sunset I ever saw. The wonderful colors held us almost spellbound for hours, until they slowly faded into twilight, as we rounded the shoulder of Observation Mountain into Katmai Valley.

TESTIMONY OF MY ASSOCIATES

At my request various members of my party have written a brief summary of their impressions, as follows:



Photograph by Robert F. Griggs

A "BUTTE" IN THE VALLEY OF TEN THOUSAND SMOOKES, FORMED OF SOLIDIFIED MUD

Paul R. Hagelbarger, Assistant Botanist.—"Bright sunshine bathed the valley when I first saw it. Even though several miles away, I was awe-struck by the surprisingly large size and striking beauty of the spectacle. There were so many more steam jets than I had even hoped to see that I could only gaze in silent admiration."

"After living in the valley and working among the fumaroles, my impressions began to change. My amazement at the great area was intensified by the knowl-

edge gained on many trips across the valley floor. The beauty of each individual vent was even more than that of the valley as a whole.

"The thing that stupefied me, however, was the ever-present proof that some terrific energy or force had only recently exerted itself. Everything seemed on such a huge scale. Our tents looked insignificant, pitched among the gaping fissures and the roaring volcanic vents.

"As I came daily to know the area better, I was more and more impressed by

the titanic forces that had been at work here. Human endeavor and achievement seemed dwarfed to insignificance by comparison. I felt out of place and like an intruder in this Land of the Gods. This valley appeared to be on another planet that was in the process of formation.

"I spent 16 days in the valley and was glad to leave, as will be seen in my diary for August 2: 'Came out of the steaming valley for good. Lucky to get out. Glad to see trees and grass again. Feel like I am just awakening after a two weeks' nightmare. Valley is wonderful, but no place to camp. Walter says, 'Lots of steam. Hell of a place.' Heartily agree.'"

SURPASSED HIS WILDEST DREAMS

J. D. Sayre, Assistant Botanist. — "My sensation on first seeing the Valley of Ten Thousand Smokes was one of wonder and astonishment. I was astonished at the great dimensions of the valley and at the countless numbers of fumaroles and fissures out of which the steam issued, to say nothing of the many other gorgeous and magnificent displays of nature. Never in my wildest dreams had I imagined anything to compare with these.

"Greatest of all was my surprise that so much energy could be released in such an easy and quiet manner without apparent injury or danger to any one or anything. I experienced no sensation of fear while staying in the valley, perhaps because my mind was so filled with aston-



Photograph by J. W. Shipley

HOODOOS IN THE SOLIDIFIED MUD, CAUSED BY FAULTING

ishment and admiration at this great marvel of nature, or because I was foolhardy and did not realize the grave dangers of falling into one of those hot places.

"I had no hatred of the place during my short stay there, although we were surrounded by many discomforts, and I said, soon after we left, that I would like to come back some time and see the place again. I am very proud to say that I was a member of the expedition which overcame the difficulties and hardships and first explored such a wonderful place."

THE COMPLAINT OF A TOPOGRAPHER

Clarence F. Maynard, Topographer. — "To me the Valley of Ten Thousand



Photograph by Robert F. Griggs

OUR WARMING OVEN IN THE VALLEY

We could keep our dinner hot by setting the pot in a hole, scooped out anywhere in the ground.

Smokes is a stretch of country that offers all the usual difficulties of topographic surveying in Alaska, with a few rather unusual ones thrown in for good measure. It is hardly a country to make the heart of a topographer glad.

"The smokes did not impress me with their grandeur or with their wonder as a natural phenomenon. Their ability to make surveying next to impossible did, however, make a very decided impression on me. On the occasional clear days when the sun was shining down the valley they seemed to be always at their best, as Griggs would put it, but to my mind at their worst. On these, the few rare days when it was not raining and the wind was not doing its best to move our camp (rather good judgment on the part of the wind, I should say) they would shoot forth jets of steam which soon took the

form of clouds and obscured the country we were trying to work.

"I finally began to believe that the smokes were out to buck me, and became convinced of it when, on one of the rare fine days, I ascended to a peak which immediately became enveloped in fog. This was not unusual, but I was impressed on returning to camp to hear from the more fortunate members of the party that the whole valley had been clear with the exception of the peak I occupied.

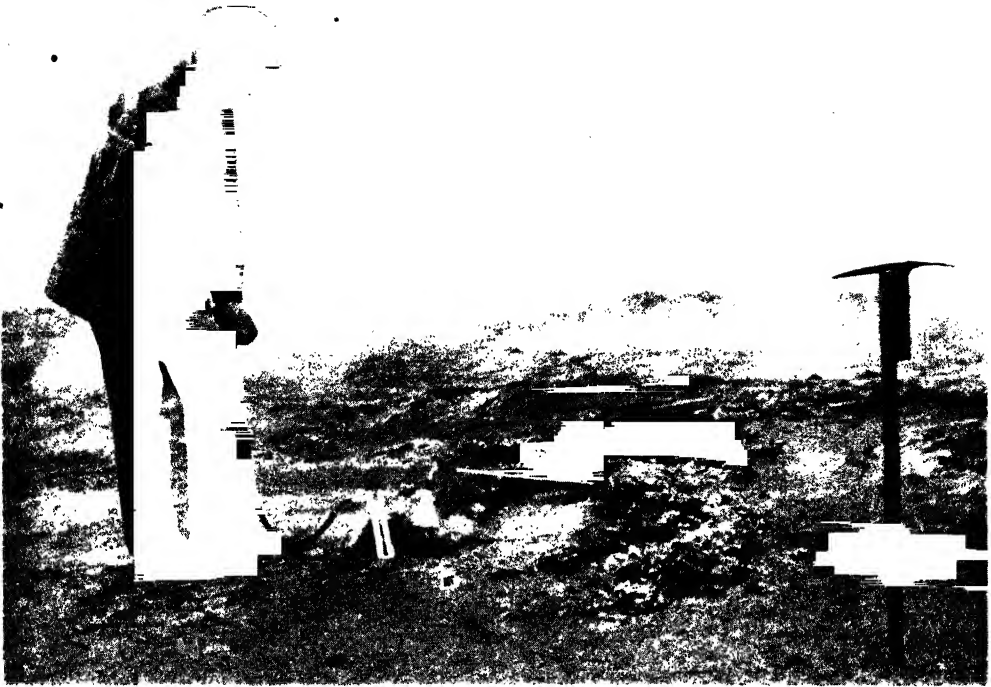
"I am not a vegetarian; furthermore, tea cooked in a steam pit is not tea. A tent that never sheds a drop of water is not a tent. A wool comfort placed on the ground which was 110° Fahrenheit in the above tent will steam beautifully. It is a natural phenomenon, but it is not a good bed. I believe I mentioned that I am not a vegetarian. I like bacon in the morning; I like it fried. A steam jet, in spite of its being glorious and a natural phenomenon, will not do this. I am from New England and have decided ideas on baked beans. Again the steam jet fell down. It needs New England training. Steamed beans are beyond the limit of its capabilities.

"I should say the coming of the smokes ruined what might otherwise have been a perfectly good country. My opinion, however, is probably valueless, as being out of tobacco always colors my views."

THE MODERN INFERNO

James S. Hine, Zoölogist.—"A hike of miles over devastation wrought by natural disturbances in the Katmai country naturally puts one into a peculiar state of mind. He is deeply impressed with the enormity of the whole affair and everything seems beyond comprehension. The unusual circumstance of summer with no plant life and no animal life surely is a strange realization.

"Having reached the summit of Katmai Pass, the Valley of Ten Thousand Smokes spreads out before one with no part of the view obstructed. My first thought was: we have reached the modern inferno. I was horrified, and yet curiosity to see all at close range captivated me. Sure that I would sink beneath the earth's crust at almost every



Photograph by J. W. Shipley

COLLECTING GAS FOR ANALYSIS FROM A SMALL VENT AMIDST A MAZE OF FUMARoles

"In laying out work in advance it sounds easy to poke a glass tube into a vent and pump the gas into a collector, but in the field all sorts of difficulties crop out which require great patience and resourcefulness to overcome. Moreover, a volcano is not an easy customer to deal with at close range."

step into a chasm intensely hot, I yet pushed on as soon as I found myself safely over a particularly dangerous-appearing area. I didn't like it, and yet I did.

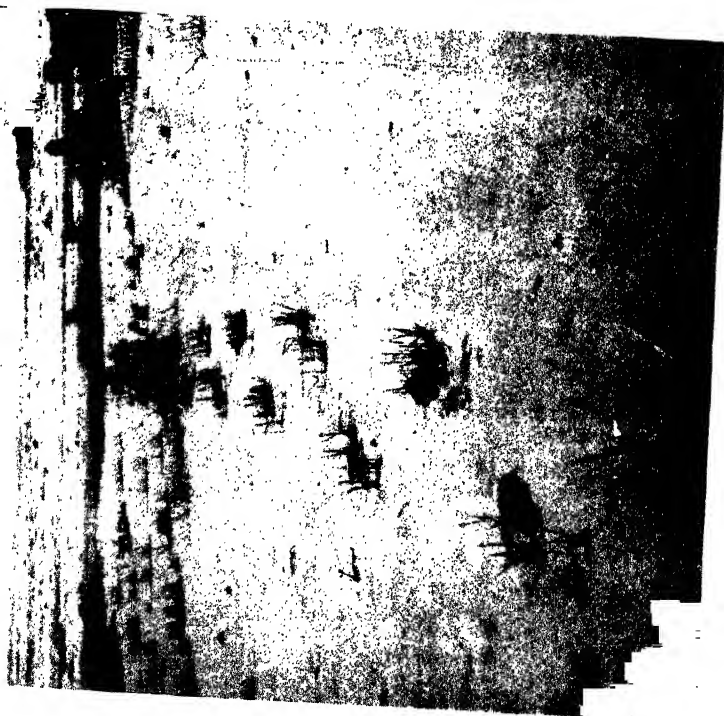
"I felt like a boy at a circus, for I couldn't take time to study the attraction before me because I suspected something more captivating further on. Nor was I ever disappointed, for nothing was exactly like anything else.

"The broken hills, the falling mountains, the magnificent glaciers, the steaming fumaroles, and the rolling streams can all be described, but their wonderful profusion and the manner in which they encroached upon one another must remain largely in possession of him who is fortunate enough to make a visit to the locality where these things abound in extraordinary splendor."

LIKE A HUGE CHEMICAL MANUFACTURING PLANT

L. H. Shipley, Chemist.—"On first entering the valley from between the two guardian volcanic cones, I experienced the same sensation as the man who on seeing a giraffe for the first time exclaimed, 'There ain't no such animal.' The quiet evolution of myriads of columns of vapor from the floor of a wide, desolate valley, the encompassing mountain ridges, the sequestered isolation, the avalanches of rocks, all vividly recalled Sinbad's adventures in the 'Arabian Nights.' It is so unreal.

"Hot streams flow from beneath banks of snow; extensive glaciers hobnob with steaming fumaroles, while icebergs and hot water are found in the same little lake. Enormous mud-flows appear to have run uphill. A stick chars when



A BEAR TRAIL THAT SPROUTED

The fresh tracks in the soft mud caught the grass seed, which blew across the smooth general surface without finding any place of lodgment.



IN THE PATH OF THE KODIAK BEAR

These are the huge tracks of an animal which followed the members of the expedition up the Katmai River valley. They are not the tracks of the bear which Professor Griggs mentions as having crossed the Valley of Ten Thousand Smokes, leaving steaming fumaroles in its wake (see page 129).

thrust into a jet of steam. It is uncannily unreal.

"But the unreality suddenly vanishes when one's foot breaks through the crust and hot volcanic gases rush out. It is also sufficiently realistic to have avalanches of rocks galloping down the 2,000-foot face of Falling Mountain while we are collecting gases in the bottom of a 20-foot hole at its base.

"The familiar fumes of hydrogen sulphide, sulphur dioxide, and hydrochloric acid transform the valley into a huge chemical manufacturing plant roofed over by a permanent cloud of vapors. And when cold and wet, it is rather comfortably lonesome to lean against the hot walls of a sheltered crevice and meditate on the dead bodies of hundreds of flies lying around the orifice of the subterranean chimneys."

A SPECTACLE OF AWESOME MAGNITUDE

D. B. Church, Photographer.—"Regardless of our packs, we hurried down the valley, past the few faint, wispy steam jets that mounted from its floor just over the divide, craning to glimpse the first steam cloud to rise from the valley beyond. There floated over the spur of the ridge to the north a billowy cloud that marked the largest steamer.

"Reaching the higher ground that had hidden my view, I gazed at the panorama before me. Flanked by Mt. Cerberus and Falling Mountain, spread the valley, a maze of pearly columns that billowed skyward and bent before the strong westerly wind. Down a narrow canyon we trudged and climbed out over its painted ash walls onto the valley floor.

"The meager pictures of the previous year, and even the graphic descriptions of Griggs and Folsom, had not prepared me to face such a spectacle of awesome magnitude. I had pictured the valley as large; the actual view dwarfed my wildest imagery to insignificance.

"I started for the nearest fumarole; it seemed a few hundred yards distant. I found it half a mile away. It was a small fumarole and I crept cautiously up to its edge. From its red-painted throat, which vanished deep in blackness, the sulphur-reeking steam roared forth in a smothering blast.

"Passing back, I found a crack in the rock-like crust of the mud-flow, through which sizzled the scorching steam and gas. A few prods with my staff opened a hole into the underground conduit, from which the steam hissed forth. The fragility of the crust and knowledge of the result of a misstep startled me. My fears began to awaken—fears that for several days made me tiptoe over spots where the earth rang hollow beneath my feet. Familiarity gave me greater confidence, but I never ceased to tread carefully the color-daubed regions of subsurface activity.

WORK DROVE AWAY FEAR

"The next day I began my work in the valley. This day the activity and the interest of work drove fear from me. The one conception that pervaded me was: how like this place to Dante's conception of his 'Inferno.' It seemed to me, as we stood on the edge of Novarupta, that this was the Devil's own private corner in hell itself. It seemed, as I gazed at the seething steam clouds that rushed from the cooling lava plug, and at the shattered, steam-smothered furnace that filled the rising vale beyond, that there was some vague, fantastic form, a horrid dream, a hideous, potent 'thing' which was not for human eyes to see nor human ears to hear.

"Then an endless night on the hot, moisture-teeming ground; an endless rolling from side to side to escape the torment of the penetrating heat that seeped up from the hot, sodden ground; and always, as I looked down the valley through the open tent door, shone the marble-like steam columns, which, like tall, writhing specters, swayed in the dim twilight.

"There was always a certain awesomeness about the valley which clung to me throughout my stay. I looked forward with relief to the time when I could put from my sight the curling steamy billows that rose from fumaroles and mounted ever skyward.

"Pictures cannot bring back the Valley of the Smokes. They have lost the awesomeness that lies in the setting. You may build in memory, but never reproduce, the scenes which lie beyond the



Photograph by Robert F. Griggs

TAKING THE TEMPERATURE OF A "HOT ONE"

Most of the vents were so hot as to be beyond the range of our thermometers; so hot that the steam would char a piece of wood and did not begin to condense for some distance from the orifice.

Katmai Pass. They seem too big to be a part of the rest of the world. They do not seem to connect up with the little things which are built into our lives.

"Outstanding in my memory is the valley as I left it. It was a brilliant day, with puffy silver clouds that floated on a sky of deepest blue and sunlight that glistened on opalescent steam jets and sparkled on peaks fresh-capped with snow.

"As, homeward bound, we skirted Cerberus, the steamers turned in the dying sunlight to shimmering gold and the snowy crests of distant mountains glistened yellow. I forgot the heavy pack which bowed my shoulders as I glanced backward at the growing beauty which filled the valley. Through its giant gateway the 'Valley of the Ten Thousand Smokes' sank from sight as we dropped over the pass, and the sky above reddened to a

crimson halo in the fading rays of the sinking sun."

PERSONNEL OF THE EXPEDITION

The organization of the expedition, perfecting details of equipment and supplies, and seeing that they were on the ground when needed, had consumed a large share of the Director's time and energy for more than six months before the departure from Seattle; but the result justified the labor, for the outfit proved adequate to the strain put upon it and enabled us to carry out the work substantially as planned.

There were three problems to be met: First, to secure men who could stand up under the excessive physical labor involved and continue to do the scientific work contemplated, each in his own line; second, so to provision and maintain the expedition as to retain its efficiency until



Photograph by D. B. Church

MEMBERS OF THE NATIONAL GEOGRAPHIC SOCIETY'S ALASKAN EXPEDITION AT
KODIAK, AFTER HAVING COMPLETED THEIR WORK IN THE VALLEY
OF TEN THOUSAND SMOKES AND ON MT. KATMAI

From left to right: Jasper D. Sayre, Botanist; Clarence F. Maynard, Topographer (Mr. Maynard was the Topographer of the National Geographic Society Peruvian Expedition of 1915); D. B. Church, Photographer; Lucius G. Folsom, Assistant to the Director; Robert F. Griggs (Chief of Expedition), Botanist; James S. Hine, Zoologist; J. W. Shipley, Chemist (Mr. Shipley was granted a leave of absence from the Manitoba Agricultural College to accompany the expedition); Paul R. Hagelbarger, Botanist; Andrean Yagashoff, Packer, and Walter Matroken, Packer.

chief reliance was the trusted stand-by of the prospector, bacon and flapjacks. Next came rice, oatmeal, beans, tea, coffee powder, dried apples, apricots, and dehydrated fruits, such as cranberries, raspberries, and strawberries. Lunch consisted of pilot bread, cheese, raisins, kippered salmon, and milk chocolate, for we stopped to cook only morning and night.

As an experiment, I included tinned butter among our supplies. This proved a boon, for it added greatly to the enjoyment of flapjacks and served as a very fair substitute for condensed milk on oatmeal, etc. We could hardly have got along without it in the Valley of Ten Thousand Smokes, where we could fry no bacon. A reflecting oven enabled us to bake

bread and biscuits at the lower camps. These proved very welcome, as experience has shown that the lack of bread and butter is a deficiency in the diet so serious as to become almost intolerable after a time.

These provisions proved very satisfactory. All members of the party were in perfect condition throughout the summer. Several of us gained in weight, and one of the boys was 20 pounds heavier than he had ever been before, despite the fact that he had rather more than the average of hard work. On the return there was almost none of that insatiable craving for a change of diet which is apt to develop after a few weeks' use of concentrated rations.



Photograph by D. B. Church

FORDING THE CREEK UNDER THE SHADOW OF MT. MAGEIK

The waters of this stream were swift, but shallow, and presented no dangers in crossing, fears of quicksand proving ungrounded. All supplies for the stay in this valley had to be man-packed from base camp, and obstructions like this creek presented many difficulties for the heavily laden members of the expedition, even though the element of personal peril was not always present.

CARRYING IN SUPPLIES ON MAN BACK

The problem of transportation was in a way the crux of the whole situation, for everything else depended on its solution. We considered pack-horses, but the difficulty of landing them through the surf, of providing fodder in the devastated district, and of managing them in quicksands and bad lands made them seem impracticable. We therefore fell back on the most primitive of all means of transportation—man - back packing. Every member of the expedition understood from the start that he was to be pack-animal first and scientist second, and all stood up under the strain of labor, to which several of them were quite unaccustomed.

The plan of operation was to proceed half a day's march from camp, establish a new camp at the terminus, from which

two men explored the country round about, while the others brought up supplies, returning each night to the starting point till a sufficient quantity had been accumulated to permit another move forward. By thus moving short distances the packers were able to dispense with all duffie, carrying freight exclusively, and the heaviest consumption of food was kept behind the front.

Perhaps the best way to convey an impression of the labor involved in such procedure will be to state the cost. We found that by the time a 50-pound sack of flour had been carried into the Valley of Ten Thousand Smokes it had cost us \$17.50.

LANDING THROUGH THE SURF

In previous years we had landed near Katmai village, on the north side of the



THE TRAIL UP TO KATMAI PASS

The way led over permanent snow-drifts, for the snow had been covered with ash during the eruption of Mt. Katmai, and this coating protects the drifts from the sun's rays. All the supplies for the camp had to be earned laboriously on the backs of the men through this pass into the valley.

bay, taking the shortest route to the volcano. But in 1917 we landed on the south side, near Kashvik Bay. Here we found a beach which, while apparently exposed to the storms, was in reality so protected by an offshore reef as to be much safer than Katmai beach, affording the best landing for many miles along the coast. Even as it was, however, one of the dories carrying our stuff to the ship on the return was nearly swamped, so that our outfit was considerably damaged by salt water.

FIRST SIGHT OF MT. KATMAI

By landing to the south of Katmai Bay, we had the added advantage of being able to place our base camp in a district unaffected by the eruption, for this area lay to one side of the great ash cloud which was carried to Kodiak on the west wind. This fact enabled us to carry on important biological studies in the comparison

of devastated with undevastated country which our situation had precluded on the previous expeditions.

Our first sight of Mt. Katmai came the day after we landed. Familiar as I was with the volcano from the work of the two previous seasons, its enormous size struck me as a new surprise. Here from a distance of over 20 miles the mountain loomed up so much bigger than the nearer mountains as to dwarf them. The great jagged edges impressed us all with a new conception of the immensity of the crater within.

Some of the new members of the expedition, seeing the volcano for the first time, accused me of not having given a correct impression of it in the article of 1917. They had not expected anything nearly so big. As I looked at it, standing three or four times higher than the clouds which drifted up the valley, I could not restrain a feeling of pride that



A CONICAL ROCK PILE ON THE SURFACE OF THE MAGEIK BOULDER FLOW



Photographs by D. B. Church

ONE OF THE LARGE ROCKS CARRIED DOWN IN THE MAGEIK BOULDER FLOW
 This phenomenon resembled a great landslide. Coming down the mountain, the mass of rock and soil made a right-angle turn into the valley like a stream of water (see page 161)



Photograph by J. W. Shipley

ENJOYING A FLAPJACK FEAST IN CAMP AT THE BASE OF MT. KATMAI

Flapjacks were a treat to the members of the expedition, for during their stay in the Valley of Ten Thousand Smokes griddle and frying-pan cookery was impossible, owing to the absence of wood. Here cottonwood trees were plentiful, but it was a ghostly forest, as all vegetation was killed by the shower of ashes which fell when Mt. Katmai exploded and erupted six years ago.

I had actually stood on the rim of that tremendous pit and looked down into the caldron below.

The first camp established up the valley was at the mouth of Martin Creek. From this base a party was sent to explore Martin Valley and Martin Volcano. [This interesting volcano was discovered by the 1915 expedition of the National Geographic Society, see pages 33 and 34, NATIONAL GEOGRAPHIC MAGAZINE, January, 1917.]

We were disappointed in our expectation of examining the crater of Mt. Martin because of the weather. We waited for several days, both on the way up the valley and on the return trip, but without success. At the beginning of the season it was left till later, and on the way out a week was reserved for exploration; but this proved insufficient, for the clouds never lifted until several days after we had had to pack up and come away without having so much as attempted the climb, because of the approach of the time for the boat to come and take us back to civilization. As the event proved, we would have had to wait fully ten days before the climb would have been possible. Only once while we waited did we have so much as a sight of Mt. Martin. One morning the clouds lifted for about an hour, so that we were able to secure some long-range pictures, but before we were ready to try the ascent they had closed down again and we had to abandon the attempt.

But, though disappointed in our hopes of exploring this volcano, we found in another feature abundant reward for the time spent in the vicinity.

ANOTHER CONVULSION OF NATURE

For at the head of Martin Creek is one of the most interesting phenomena of the whole volcanic district—what, for want of a better term, I have called the "Great Mageik Boulder Flow"—a third wonder, almost worthy to be ranked along with the crater of Katmai and the Valley of Ten Thousand Smokes. When I say that a mass of rock and soil containing boulders as big as a house flowed like water down a valley, I shall probably be classed with Münchhausen, the prince of liars; but, fortunately, these are the days

of the camera and I can prove my assertion.

During the eruption, quite possibly coincident with the bursting forth of Martin and Mageik volcanoes, the whole face of a mountain let go and flowed down into the valley, carrying destruction to everything within its reach. It was a real example of one of those great and sudden "convulsions of nature" of which one reads so much in the older literature, but of which he sees so little evidence in the world about him; for even in a volcanic district most phenomena clearly belong to the regular order of nature.

But here, for once, is a formation so remarkable as to make it appear at first sight that the ordinary laws of nature were suspended during its formation.

Rocks, exceeding ten feet in diameter, are abundant in the flow, which in some places is made up almost entirely of such big boulders without any mixture of finer materials. Much larger rocks are by no means uncommon. We found many reaching 30 or 40 feet in length. The largest single stone we observed was about 50 feet long, 20 feet wide, and 20 feet high, lying largely concealed in the mass of detritus (see page 159).

It seems incredible that a body composed so largely of angular rocks could by any means have acquired such a high degree of fluidity as is shown by this mass, but in view of the fact that it turned a corner in the valley and adjusted itself to the irregularities of its bed, one is compelled, in justice to the facts, to recognize that its motion was more of a flow than a slide.

Nowhere can one form a reliable estimate of its thickness, but over much of the ground it must exceed 100 feet. The total mass of materials moved was therefore stupendous.

At the extremity it is composed mostly of chunks of the old peat soil, which originally covered the mountain side with only small quantities of rock fragments. Boulders are more numerous a little back from the tip, and in places the terrain is composed exclusively of broken stone over considerable areas.

One of the most curious features is the character of the surface, which lacks entirely the hummocky appearance typ-

ical of the ordinary landslides, but instead is covered in many places by regular, steep-sided, conical piles of material. Some of these stand isolated; others are thickly grouped. Since their slopes stand at the "angle of repose," it is probable that they were formed by the shaking down of more irregular masses (see page 159).

THE ASCENT OF KATMAI

After the successful ascents of 1916, we considered the climbing of Katmai itself a secondary matter. The main object in making the climb on the 1917 expedition was to survey the crater, ascertain its dimensions, and to secure better pictures of the abyss. Remembering our previous difficulties with soft, slippery mud, we decided to leave the ascent until late in the season, after the winter's snow had melted and the mud had had time to dry up somewhat.

Days for climbing the high mountains were very few in 1917, and we had to wait in idleness for a full week before there came any chance to try. Even then we were cheated, for the clouds began to gather as we ascended and completely shut down just as we reached the crest. We had one fleeting glimpse of the crater, but before we could so much as set up a camera it was gone, and we had to wait three days more before there was another chance to make the climb.

Our decision to defer the ascent till late in the season was well founded, for in places where the year before we had floundered up the slopes in slippery mud ankle deep we found the ground hard and firm, so that the climb, which before had taxed our strength and endurance to the very utmost, was now made easily in four hours, even under 30-pound packs. Those who had not gone through the previous experience had difficulty in believing that the climb could have been so much harder until we came upon our old trail, broken so deeply into the mud that it persisted sharp and clear for a long way, so that every one could see for himself how he was traveling easily over firm ground, where before we had plowed along ankle deep in mud.

This was only one of the many frequent examples we had of the difference

between doing a thing for the first time and following along after the path is broken. I have no doubt that some day our accounts of the difficulties we encountered with the limited facilities at our command will appear incredible to those who may tour the district provided with all the facilities and comforts of modern travel. It seems to me entirely practicable, for example, for any one to ride up to the very rim of the crater astride a horse. All that is needed is the organization necessary to furnish the horse and the fodder.

AN ABYSS OF INCONCEIVABLE SIZE

In spite of the disappointment on the first attempt, every one of the party was enthusiastic over the crater, and all agreed that the single glimpse we had before the clouds shut in was ample reward for the climb. Some members of the party indeed thought the sight more beautiful and wonderful than the Valley of Ten Thousand Smokes itself. The party were unanimous in the opinion that the photographs convey no idea whatever of the vast abyss. Without the colors and with nothing to indicate the scale, to give more than a hint of the real character of the phenomenon is impossible. Like the Grand Canyon and other sublime marvels of nature, the crater must be seen to be appreciated.

But even when one stands on the rim and looks down, he can gain no conception of the real magnitude of the crater. It is so far beyond any one's powers of perception that the wonder comes back to him and grows with each visit.

I found myself surprised at the crater's grandeur, in spite of my experience of the previous year, for it was far more sublime than I had remembered it. One reason why the magnitude of this volcano is so hard to grasp is that the proportions are so perfect that no one dimension appears exaggerated at the expense of the rest. If the crater were not so deep, the area would be more evident; if the walls were not so precipitous, one could better measure with his eye the distance to the bottom. But as it is, one can only realize that the immensity of the awesome abyss is far beyond the grasp of his mind.



Photograph by D. B. Church

CLIMBING OUT OF KATMAI CANYON

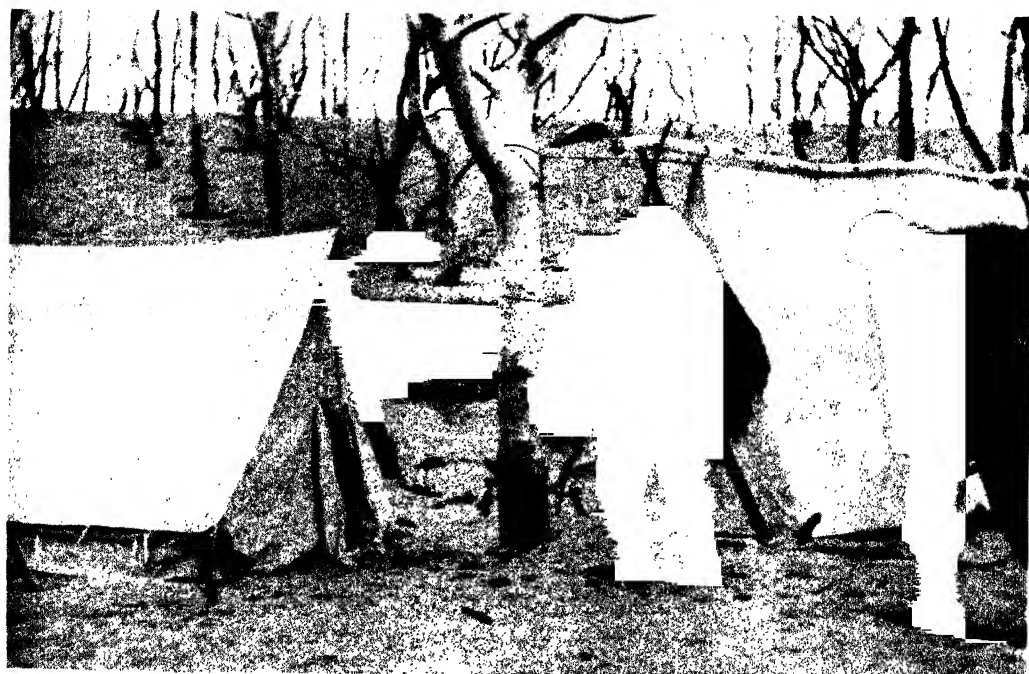
The wall opposite is as high as parts of the Grand Canyon, as beautifully colored, and as precipitous (about 4,500 feet). This is one of the many natural wonders of surpassing grandeur in the Katmai volcanic region which have been made known to the world through the explorations and discoveries of the four National Geographic Society expeditions.



Photograph by D. B. Church

THE ONLY HOOKS USED IN CATCHING THESE SALMON WERE HANDS

In a small creek which runs into Katmai Valley the members of the expedition found these four and five pound fish which had come up into fresh water to spawn. They were easily caught by the tail in the shallow pools.



Photograph by J. W. Shipley

CARRYING GRASS FIVE MILES INTO THE DESERT FOR THE SAKE OF AN EASIER BED

Some of the members of the expedition had not the foresight to provide such mattresses; their blankets, therefore, were spread upon pebbles. This was Camp Four, the last camp before entering the Valley of Ten Thousand Smokes (see map, page 155).



Photograph by J. W. Shipley

WORK OF THE GREAT FLOOD IN THE KATMAI VALLEY

A stream flowing between Katmai Volcano and its neighbor had piled up an immense dam across the valley. Behind the dam a vast lake accumulated. Then the dam burst and the torrent, like a Johnstown flood, rushed seaward. For miles, where thick forests had stood, the trees were sheared off at the surface of the ash. The few trees which remained were bent, twisted, splintered, and broken in every describable manner (see the story of this flood in the January, 1917, *GEOGRAPHIC*).



Photograph by D. B. Church

A CHEMICAL LABORATORY IN THE KATMAI REGION

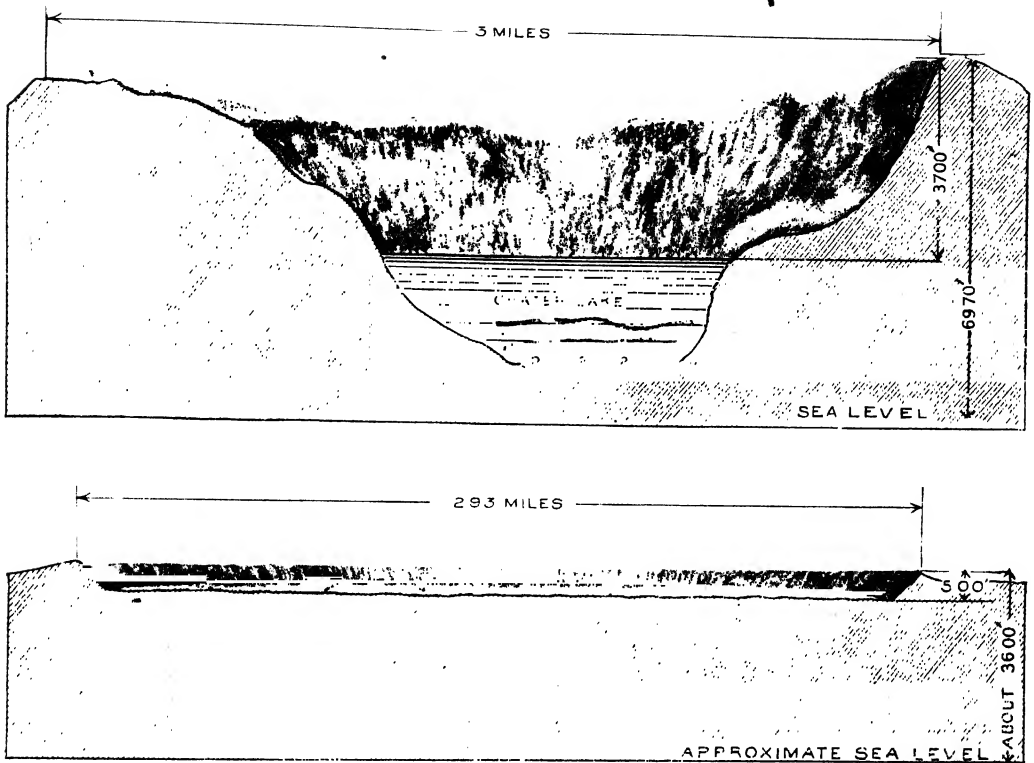
Only a chemist can understand the difficulties of making quantitative analyses where one must carry his laboratory on his back



Photograph by Robert F. Griggs

MT. KATMAI, TITAN OF VOLCANOES: ALASKA.

The eruption of Mt. Katmai, in June, 1912, was one of the most tremendous volcanic explosions ever recorded. A mass of ash and pumice whose volume has been estimated at nearly five cubic miles was thrown into the air. This left Katmai as it is shown here, the mere stump of its former self; the white line indicates approximately the original height of the mountain. The great arc shown in the photograph is the rim of the gigantic crater within. The peaceful steam clouds now floating up from the crater, compared with the devastating blast which completely disemboweled the mountain, are like the wisps of smoke which come from the cannon's mouth after the projectile has been fired.



THE KATMAI CRATER (UPPER) COMPARED TO KILAUEA CRATER (LOWER)*

Until the National Geographic Society explorations, Kilauea of Hawaii had been considered the greatest active crater on earth, but it is now proven to be far exceeded in size by the world's youngest of volcanic vents, the Katmai crater, which is not yet six years old (see page 168).

Knowing that the size of the volcano was beyond my powers of comprehension, and having no means of ascertaining the dimensions, I did not dare in 1916 to report my real judgment of its depth, for fear that in the excitement of the moment I should have made some wild exaggeration that would put me in an embarrassing position when the actual dimensions were obtained. The facts prove that even our largest estimate of depth was far short of the truth!

I dared not then make any comparisons with the other great craters of the world; but now, with the data of Maynard's accurate survey at hand, such a comparison furnishes the best means of conveying an impression of the magnitude of Katmai itself.

DIMENSIONS OF THE CRATER

The survey shows that the width of the crater rim, as seen from below, which includes all of the concavity on top of the mountain, is 3 miles. The circumference, measured along the highest point of the rim, is 8.4 miles. The area is 4.6 square miles. The precipitous abyss, which does not extend to the rim on the southwest side, is somewhat shorter, measuring 2.6 miles in length, 7.6 miles in circumference, and 4.2 square miles in area. The milky blue lake in the bottom is 1.4 miles long and nine-tenths of a mile wide, with an area of 1.1 square miles. The little crescent-shaped island in the lake measures 400 feet from point to point. The precipice from the lake to the highest point of the rim is 3,700 feet.



Photograph by Clarence F. Maynard

KATMAI, THE GREATEST ACTIVE VOLCANO IN THE WORLD

If every skyscraper, department store, tenement-house, theater, and residence—every structure reared by man—in Greater New York were dumped into the Katmai crater, there would still be a yawning abyss twice the size of Kilauea, in the Hawaiian Islands, until now considered the greatest active volcano in the world.

The cubical capacity of this stupendous hole is no less than 4,500,000,000 cubic yards. Into the crater 900,000,000,000 gallons could be poured. This is more than four times the total capacity of the Ashokan and Kensico reservoirs, from which Greater New York now receives most of its water, and the Schoharie reservoir, which is to be constructed. New York City uses 550,000,000 gallons of water daily. Katmai crater once filled could supply the American metropolis for 1,635 days.

But even these figures do not tell the whole story, for they do not include the amount of rock that was blown off from the mountain during the brief sixty hours of its explosive activity. There must be added the material in the peak above the level of the present crater rim.

The figure then arrived at is 11,000,000,000 cubic yards. This is over forty times the amount of earth and rock removed in the construction of the Panama Canal.

KATMAI, THE GREATEST ACTIVE CRATER IN THE WORLD

Kilauea, in the Hawaiian Islands, has always been accounted the greatest active crater in the world, but it is clear that it must now yield the palm to Katmai. Kilauea's greatest diameter is 2.93 miles, its circumference is 7.85 miles, and its area is $4\frac{1}{4}$ square miles. These dimensions are slightly smaller than the corresponding ones on Katmai. The great difference is in depth, Kilauea's greatest depth being 500 feet, while Katmai's is 3,700 feet.

Of craters no longer active, only two surpass Katmai in dimensions: Crater Lake, in Oregon, measures 4 miles wide by 6 long, while Haleakala, in Hawaii, has an area of 19 square miles. But while Katmai is somewhat inferior to these in size, yet because of its proportions it is a far grander spectacle to look upon; for in both Haleakala and Crater Lake the cliffs surrounding the pit

are so much lower comparatively as to make their craters inferior to Katmai, from a scenic point of view. The tremendous depth more than any other feature impresses the beholder of Katmai.

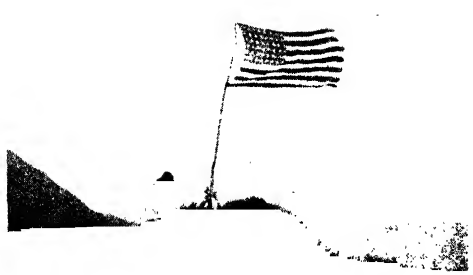
Moreover, if one recalls the fact that the beautiful blue of the Katmai lakes and the wonderful canyon of Katmai River, which is almost as deep as the Grand Canyon, lie in full view from the crater rim, he will recognize that for sublimity of scenery this place has no equal in the whole world.

ALL OF THE BUILDINGS OF GREATER NEW YORK WOULD NOT FILL THE CRATER

Statistical comparisons of objects, so far from the experience of most people, can give, however, no conception of their real magnitude. Our comparisons must be with objects and places within our every-day experience. As I sought for some familiar object big enough to serve as a basis of comparison with a hole of such enormous dimensions, I remembered the experience of my first attempt to see New York City afoot. I can never forget my bewilderment at the endless rows of closely built blocks, series on series, and how I found myself physically exhausted long before I had begun so much as to inspect the city in detail.

Here, then, is an almost inexhaustible supply of objects, large enough to serve as units for the measurement of cubic capacity of almost unlimited dimensions. If one could pick up the blocks of buildings of New York one by one and drop them into the crater of Katmai, how many would be required to fill it?

The truth is that if a typical New York tenement block should be set bodily into the crater of Katmai it would be but a drop in the bucket. But the tenement houses are relatively insignificant in comparison with the skyscrapers of lower New York. How would they appear in the crater? One must answer that it is doubtful whether all of the skyscrapers of New York together would fill the lake at the bottom of the abyss.



Photograph by Paul R. Hagelbarger

OUR FLAG, WHICH FLEW ALL SUMMER
FROM THE LOOKOUT AT BASE CAMP,
BY THE SEA

If one could imagine himself really trying to fill the crater with the buildings of New York he would find that if he dropped them in, block by block, the task would be so long that he would soon want to begin operations on a larger scale, cutting off bigger and bigger slices of the city, as he worked up town.

Even so, he would be astonished at the capacity of the hole, for after he had made a clean sweep of Manhattan Island he would find that he had only begun on his job! He would have to cross the river and continue through Brooklyn, then take the Bronx, and all the other boroughs of Greater New York. And if every single structure erected by man in this great city were deposited in the crater they would by no means fill the vast abyss. On the contrary, the hole that remained would still be a good deal more than twice as large as Kilauea!

NATIONAL GEOGRAPHIC SOCIETY

SINCE ITS FOUNDATION, thirty years ago, the National Geographic Society has been responsible for many notable achievements in the realms of discovery, exploration, and conservation.

Its Peruvian expeditions resulted in the discovery by Hiram Bingham of the Lost City of the Incas, Machu Picchu, the great capital which was the seat of power and culture of a remarkable civilization that flourished in the Western Hemisphere for centuries before the coming of Columbus.

It assisted in financing the expedition of Rear Admiral Robert E. Peary, which discovered the North Pole.

Its contribution of \$20,000 saved from destruction a wondrous forest of giant sequoias in California, and gave it to the American people as a part of our national-park system.

Now come the discovery of the Valley of Ten Thousand Smokes and the survey of Katmai, the world's greatest active volcano—achievements which will rank with the foremost contributions to world geography in modern times.

Each of the 650,000 members of the Society will experience a feeling of pride and satisfaction in this latest accomplishment, for it was their financial support of the organization's aims, "the increase and diffusion of geographic knowledge," that made possible the equipment of Robert F. Griggs and his intrepid associates for the task which they have performed with signal distinction and success.

HELPING TO SOLVE OUR ALLIES' FOOD PROBLEM

America Calls for a Million Young Soldiers of the Commissary to Volunteer for Service in 1918

BY RALPH GRAVES

MRS. MULVANY with her pet pig is no longer an object of ridicule and a topic for jest. She is a patriot. The Solomons of conservation are sending Mr. Average Consumer to her as a model of thrift, just as the Wise Man of Biblical times sent the sluggard to the ant. By means of her pig Mrs. Mulvany is helping to win the war, for she is making from one to two pounds of pork grow each day where none grew yesterday.

"Go thou and do likewise" is the plea of the officials of the U. S. Department of Agriculture, upon whose shoulders rests the burden of educating the American public to the necessity for the production of millions of pounds of additional food-stuffs in order that the armies

of liberty—American, French, British, and Italian—may be kept efficient on the battle-front and in the training camp.

Mr. Mulvany calls Mrs. Mulvany's pet "the gentleman that pays the rent," while throughout the Middle West, since the pioneer days, the porker has been known as the "mortgage-lifter." For the last eight years the pig has occupied an increasingly important place, both in the economy of the farm and of the village household, and has been a stimulus to the productive activities of thousands of boys who have organized "pig clubs."

The members of these and related agricultural clubs have recently received a new designation of tremendous significance—soldiers of the commissary. There were 45,000 such soldiers in the pig divi-

sion of the commissary army in 1917—an army whose total strength (corn clubs, potato clubs, poultry clubs, sheep clubs, calf clubs, and canning clubs) was well over half a million.

This year an army of one million is needed. It must be a volunteer, not a conscript, army, and the age limit is from 10 to 18 years. Recruits will not be confined to the farm districts; enlistments are equally desirable from towns, villages, and the suburbs of our great cities.

What has been accomplished by America's youthful commissary army is a story of surprising and stimulating interest, an incentive to redoubled effort during the next nine months, when every ounce of meat produced, every bushel of grain, every can of vegetables, every pound of wool, will have a direct and potent bearing upon the length and conduct of the war.

POPULAR PREJUDICE WITHOUT FOUNDATION

Just as the aviation service, more than any other branch of the army or navy, exercises an irresistible appeal to young Americans eager to join the fighting forces of the United States, so the pig clubs are exercising a peculiarly strong appeal to the boys and girls of the country. The result will not be transitory and for the immediate necessities only. In fact, the direct and indirect effects of the pig-club movement throughout the South, where it originated less than eight years ago, have been so salutary that the United States Government, even before the emergencies brought about by the war, inaugurated a widespread campaign to encourage and promote the extension of the work.

One of the first and most essential steps to be taken in the effort to increase the number of pig fanciers and enthusiasts is a campaign of education to disabuse the public mind as to the habits and nature of pigs. Few domestic animals have been so persistently maligned and with so little reason.

Instead of being the unclean, insanitary creature almost universally depicted, it is the testimony of those who know the pig best that it is one of the cleanliest of

animals, surpassing the dog in this respect. It is true that many towns have ordinances which prohibit the keeping of pigs within their corporate limits, but these restrictions have been the outgrowth of the carelessness and negligence with which pigsties have been tended in the past. When given the same care which customarily is observed in keeping the stalls of horses and cows in proper condition, pigsties are far more sanitary and less odoriferous. A pig, given a bed of straw, will keep it clean, in striking contrast to the habits of horses and cows in stalls.

Those who appreciate the value and importance of the "keep a pig" movement and are anxious to foster the substitution of pigs for dogs as pets have begun campaigns in many communities to procure a modification of town ordinances which will permit the raising of a pig or pigs on premises where careful sanitary regulations are strictly observed.

There are more than 10,000,000 boys and girls in the United States between the ages of 10 and 18 years. It is an extremely reasonable ambition on the part of the Department of Agriculture to enlist one-tenth of this number into active service as food-producers, supplementing and coöperating with the farmers and the housewives in their essential labor of increasing the supplies so vitally needed in the present emergency.

THE BEGINNING OF PIG CLUBS

It was in the fall of 1910, in Caddo Parish, Louisiana, that a rural schools superintendent, E. W. Jones, originated and organized the first boys' pig club. It was a modest beginning, with 59 boys, who were in a quandary as to the best method of disposing of the crops which they had harvested in their corn-club activities. The pioneer pig-club promoter conceived the idea of affording the boys an opportunity of realizing a profit not only on their corn crops, but a feeder's profit on the grain as well.

When this movement began a pure-bred pig was a rarity in the South. The "razor-back," shifting for itself in the pine barrens and leading a "root-hog-or-die" existence while ranging over exten-



Photograph from Department of Agriculture

GROOMING A PIG FOR THE STATE FAIR

Eight years ago, before the inauguration of the pig-club movement in the South, most of the hogs in that section of the United States were of the razor-back variety—the kind which is so thin and scrawny that a wag has declared the farmer can prevent its going through a hole in his fence by tying a knot in its tail.

sive palmetto shrub tracts, was the only type of pig familiar to the farmer. Today blooded swine are the rule rather than the exception, and it is a high tribute to the educational value of the boys' pig clubs that of the four States—Mississippi, Georgia, Virginia, and Delaware—reporting an increase in swine population on September 1, 1917, over the same date in 1916, Mississippi and Georgia stand second and third in pig-club enrollment. These two States reported an increase of 90,000 hogs, while the country at large showed a decrease of 5,000,000.

One of the strongly emphasized slogans of the pig-club organizers and supervisors is that it does not pay to raise a poor hog. On the other hand, the profits to be derived from pure-bred pigs are exceptionally large, considering the amount of capital invested. This preachment not only has had its immediate ef-

fect in pig-club communities, where example has taken the place of precept, but it is causing the farmer to awaken to the fact that his son and his daughter are proving more efficient than he, simply because they are taking advantage of the information which has been gained by experts and specialists through years of experimentation and research.

THE "PRACTICAL" FARMER VS. THE FIG-CLUB MEMBER

The "theorists," as the college-trained agriculturists were once called, are no longer scorned by the "practical" farmer, whose "practicality" is seen in a very unenviable light when he is compelled to admit that it takes two years for his range-reared hog to acquire a weight of 150 pounds, while a pig-club member, like young Walter Whitman, of Indiana, presents as an exhibit his pet Duroc,



Photograph from C. C. French

BEING BROUGHT UP ON THE BOTTLE

A foundling of the sty finds a solicitous guardian in this member of a Texas pig club. The hungry little wee-wee will reward its master by proving a most interesting and harmless pet, and when it has outgrown its playful ways it will enrich the family larder and the boy's purse.

which gained 18 pounds, 21 pounds, 27 pounds, and 24 pounds in four consecutive weeks.

When Walter's pig was six months and seven days old it weighed 297 pounds, and on its eighth-month birthday it tipped the scales at 456 pounds. The average daily gain was 2.35 pounds, at a cost of nine and one-tenth cents a pound. George Barker, of Yeddo, Indiana, has a record

of a daily gain of 2.24 pounds for his pig, at a cost of seven and three-tenths cents a pound, while the pig of Samuel Evans, Brazil, Indiana, gained two pounds a day during the feeding period, at a cost of six and two-tenths cents a pound.

In the Southern States, where pasturage is more abundant and dependence upon corn for fattening food is not so great, the cost of gain per pound is less.



ASTRIDE TWO HUNDRED POUNDS OF SEVEN-MONTHS'-OLD PIG

One of the by-products of the boys' and girls' club movement throughout the United States is the instilling of a love of animals, which will result in young people taking a greater interest in farm life.

BANKERS FINANCE PIG-CLUB BOYS

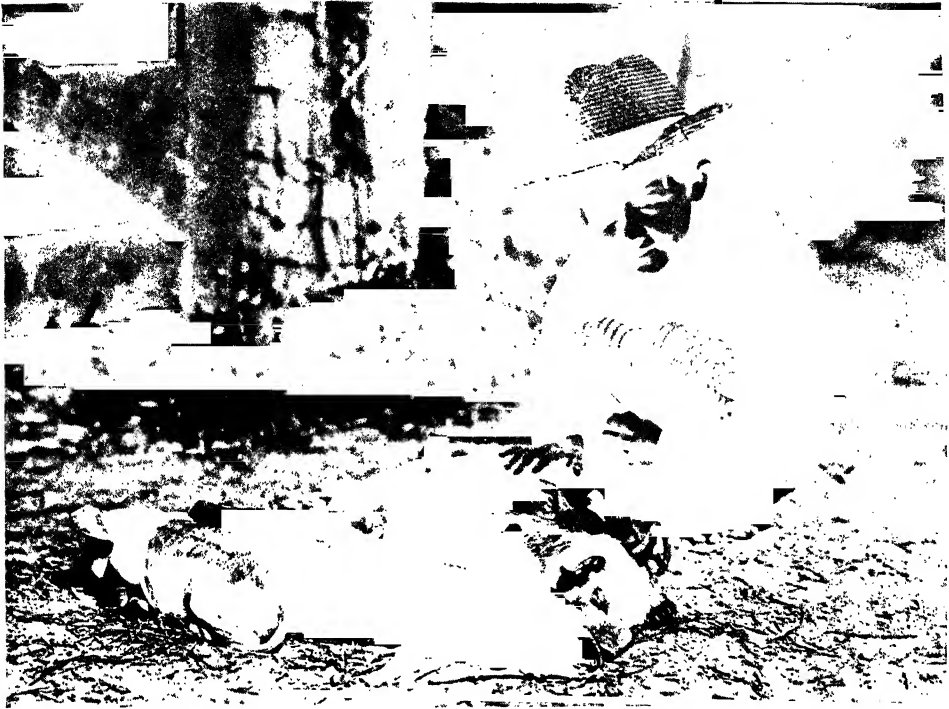
One of the most interesting developments of the pig-club movement has been the establishment of cordial business relations between bankers and boys who want to raise pigs. There are bankers in practically every State who are glad to supply club members with the necessary funds for their start as pork-producers. The State of Arkansas furnishes a typical example. Last year the bankers of that Commonwealth financed 2,400 boys and girls out of the total pig-club membership of 2,700.

Not only have such loans proved to be "gilt-edged" from the financier's standpoint, but they have been a direct source of increased revenue and business for the bank. A Texas banker recently bought 326 pigs for club members in his county and was able to trace \$75,000 direct increase in his deposits as a result of the cordial relations established with the successful club members and their families.

In financing pig clubs the bankers cooperate with the joint representative of the State agricultural college and the U. S. Department of Agriculture, known as the State extension leader, who designates a pig-club agent to organize a county club. All of the efforts of the members are, therefore, under the supervision of a trained leader and practical teacher.

Two methods of financing have proved popular. The usual practice is to lend a club member the sum necessary for the purchase of his pig, the only security given the bank being the member's promissory note, bearing a nominal rate of interest. The note is paid when the pig is sold or, in case of a sow-and-litter project, when the weaned pigs are marketed.

The second method is known as the "endless-chain contract." Under this plan the bank distributes a number of weanling gilts among the club members, with the understanding that these members return to the bank two weanling gilts



Photograph from Department of Agriculture

THESE LITTLE PIGS WILL GO TO MARKET

But before that event this ruddy-cheeked youngster will have enjoyed the work of feeding, fattening, and keeping a record of the gain in weight and the cost per pound of the seven porkers, which will afford him as much pleasure and pride as could any other farm pets—and decidedly more profit in the end.

from the first litter. These gilts are in turn "farmed out" to other club members on similar terms, and the bank's holding of pigs thus increases by arithmetical progression; hence the term "endless chain."

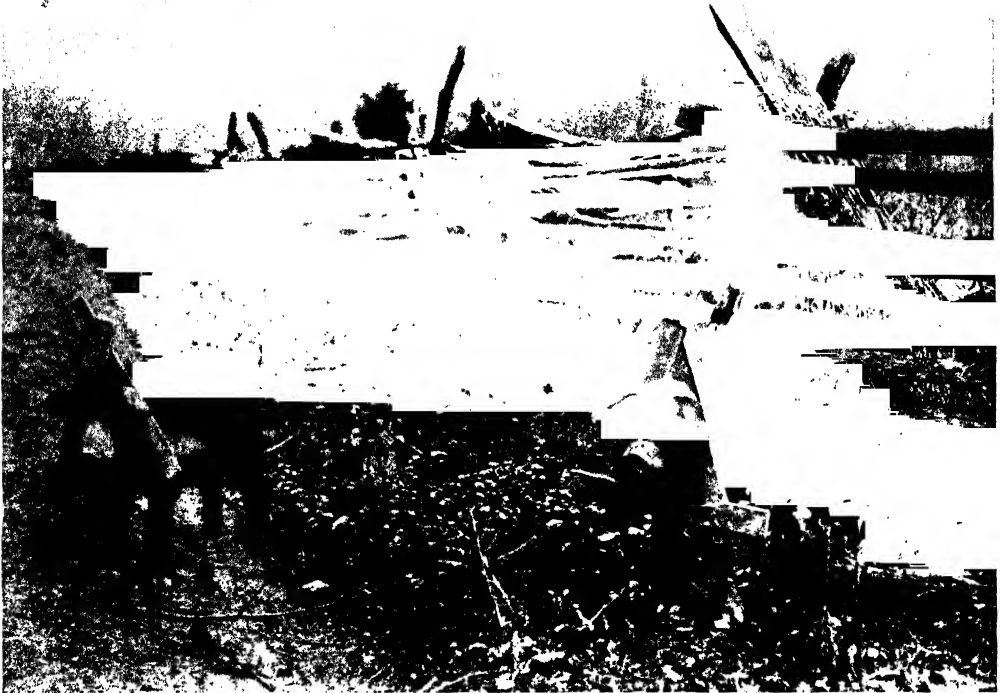
REMARKABLE ENTHUSIASM EVINCED BY PIG-CLUB BOYS

It is not surprising that bankers find their pig-club loans conducive to the establishment of cordial relations with the future farmers and swine breeders of their communities, for the interest taken in their pigs by club members is one of the most significant phases of the movement.

This interest is reflected in thousands of letters received by instructors, club agents, Department of Agriculture officials, and the bankers themselves. There was the case of a crippled child in Mississippi last summer who became so en-

grossed with the project of fattening his pig that he induced his parents to allow him to move his cot to a shed near his pig-house in order that he might feed his pet at midnight. One night the pig failed to eat his usual meal with the customary piggish relish; whereupon the youthful owner hobbled to the house on his crutches and telephoned to the county pig-club agent in the adjoining town and insisted upon his coming at once to ascertain the cause for the loss of appetite.

That pigs make attractive pets and are regarded with genuine affection by their youthful masters is a fact of common knowledge to all who have followed the pig-club movement. At one of the fairs in a Southern State, when a pig had been awarded a blue ribbon the boy who had raised the animal from a weanling, oblivious of the crowd, broke into the ring, threw his arms around his pet and



Photograph by George E. Hall

"WE ARE ALL IN STYLE IN THE OZARKS; EVEN THE HOGS WEAR STANDING COLLARS"

A type of wooden yoke used in Oklahoma and Arkansas to prevent pigs from rooting their way under rail fences into pastures not intended for them. This kind of protection is not needed where the pig is well cared for and provided with an ample fattening ration.

kissed it, to the delight of judges and spectators.

BOY OF SIX RAISES A CHAMPION PIG

One of the instances to which pig-club advocates refer with special pride is the experience of Jack Starr, of Midland, Texas, who wanted to join a pig club, but learned that he was too young for membership, being only six years old. Not discouraged, however, he decided to follow pig-club rules until such time as he could join. He purchased a pure-bred pig, the runt of the litter. When the pig was 10 weeks old it weighed 29 pounds. The pet was thereafter fed, according to the pig-club agent's instructions, on a properly balanced grain ration, and was allowed to graze on Johnson grass, weeds, and volunteer oats for green feed.

Jack watched carefully for the appearance of vermin, and the few lice on his pet were easily removed with an applica-

tion of grease and kerosene. A mineral mixture of charcoal, wood ashes, salt, and copperas was always kept in the pen.

When the time came for Jack to exhibit his pet at the county fair it was eleven months old and weighed 450 pounds. Not being eligible in the pig-club class, the youthful exhibitor entered his pet in five other classes, taking five blue ribbons and winning \$25 in cash, with which he started his first bank account. In the following November this prize animal had a litter of nine pigs, five of which were sold for \$12.50 each, and the youthful breeder is now well launched on his announced career as a stock farmer.

One of the duties of each pig-club member is to write the story of his experience at the end of the season. The narrative is usually told in simple phraseology, reflecting the earnestness of the member and his keen interest in all that pertains to his pig.



Photograph from O. H. Benson

POINTING OUT TO A PIG-CLUB MEMBER THE SCORING POSSIBILITIES OF A
PROMISING LITTER

To prevent canker sore mouth, pig-club members are admonished to keep the pens clean and well bedded with fresh straw. The day after the pigs are born the little tusks on the sides of the mouth should be clipped off even with the gums, a pair of bone forceps being used for the operation. The tusks should not be pulled out, however.

THE LIFE STORY OF A PIG-CLUB PIG

Perhaps no clearer or more concise statement of the cycle of a pig's existence is to be found than in the following report made by an Indiana high school pig-club member:

"The reason that I entered the pig contest was an argument that I had with a neighbor. He said that a hog would not

gain over a pound a day for any length of time. I said that he was wrong and that I would prove it to him. I immediately started to look around for a pig. Because of previous observations I had made, I decided to get a Duroc Jersey. I sent to different experiment stations for bulletins relating to hogs and read all I could about them in books and farm



FIFTY-TWO PURE-BRED DUROC JERSEY PIGS PURCHASED BY A BANK AND READY FOR DISTRIBUTION AMONG PIG-CLUB MEMBERS

Few investments have proved safer than the money spent in farming communities by banks willing to finance boys and girls eager to join the pig-club movement. In some cases the necessary capital is loaned to the boys and girls on promissory notes; in others the bank purchases the pigs and farms them out, each member agreeing to return to the bank two gilts from the first litter of bred sows (see page 174).

papers. From the analyses of feeding stuff in the bulletins, I got the addresses of the firms that sold the best feed and sent for some. I went into the contest with all my heart, because I felt that I must defend my argument.

"When I got the premises I built a pig house and pen. The house was in a cool, shady place, where the sun could shine on it a few hours in the morning. Close by it I made a cement wallow and an oiler. The fence was built around the patch of rape, oats, and clover that I had sown for the pig. I made things sanitary and kept them so during the contest.

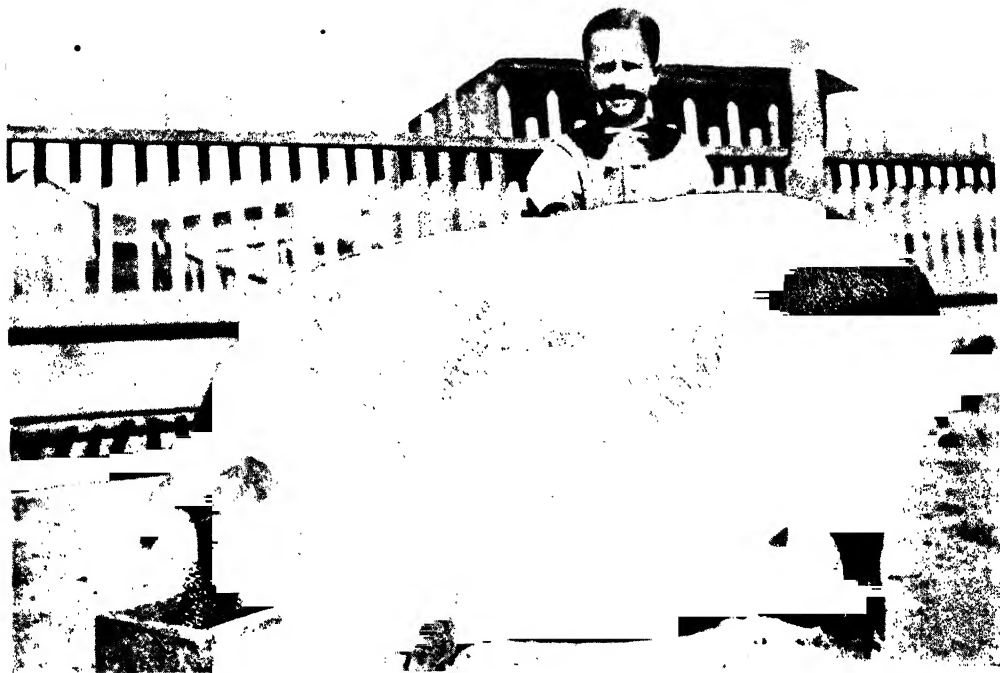
"The next step was to introduce the little red runt to his new quarters. If he was disgusted he did not show it by grunting, for after the first day he never grunted, squealed, nor rooted.

"Several things indicated that this pig

needed spice for his system, and as 'variety is the spice of life,' I decided on a variety of feeds and ways of feeding which were none the worse for the pig. People must have their foods prepared differently at different meals, and as a pig comes close to being the same as some so-called humans, I prepared his feed accordingly.

"I fed only the amount of feed that the pig would clean up in a short time; consequently he ate large quantities of the pasture. I was always on the job and the pig responded, and it was not long before I had not a pig but a hog.

"The results of the contest were: the pig weighed 58 pounds at the beginning and 243 pounds at the end. He gained 185 pounds in 92 days, or two pounds a day. The cost of production was 5.03 cents a pound and the cost of the feed



JACK STARR, OF MIDLAND, TEXAS, AND HIS PRIZE-WINNING DUROC JERSEY PIG

When this pig was 10 weeks old and was turned over to Jack, as his pet, it weighed 29 pounds. Less than nine months later it weighed 450 pounds and had won five blue ribbons and \$25 in cash for its youthful master.

was \$9.30. The value at the end was \$46.17 and the profit was \$28.87.

THE CHEAP COST OF PRODUCTION

"On account of the hot weather, I kept him a few days after the contest ended, and when I butchered him he weighed 267 pounds on foot and 227½ pounds dressed. He dressed out 85 per cent. I received 25 cents a pound, which made me a total of \$56.87.

"After the contest was over I wanted to see how my results compared with some other experiments, and this was what I found: Carlyle, of Wisconsin University, found that one acre of rape equals 2,436 pounds of corn meal and wheat shorts when fed in combination with these feeds. Taking one-sixth of this, although my patch was larger, it would make 406 pounds of concentrates that my pig could have eaten from the rape, not considering the oats and clover.

I fed 217 pounds of concentrates and 500 pounds of milk, which is equal to 100 pounds of concentrates. Adding the three, I found that the pig could have eaten the equivalent of 723 pounds of concentrates. The Alabama Station reports that rape makes a saving of 200 pounds of grain for every hundred pounds gain. This compared favorably with my results.

"I figured that the cheap cost of production was due to three things: First, the high protein content of the concentrates; second, good health of the pig, due to great variety of feed and sanitary condition of the lot and sleeping quarters; third, the pig consumed a large amount of rape, due to good health and appetite, thus reducing the amount of other feeds.

"Another thing that I learned was that if a boy wants something decidedly interesting he should by all means get a pig and get into the game. When the contest is over he will say that he has learned



A HAPPY BUT EVER HUNGRY FAMILY

Photograph from E. Niebergall

With the dawn of their earthly existence all healthy pigs demonstrate that they have inherited that most typical of piggish characteristics, an insatiable appetite, which enables them to gain from one to two pounds in weight a day, after they are a few weeks old



Photograph from E. Niebergall

THEIR FULL DINNER-PAIL

Pigs are usually weaned when they are from 10 to 16 weeks old. Those weaned before six weeks of age usually have dairy products to rely on. The only advantage of early weaning is to enable the sow to raise two litters a year.

something that he never knew before and probably will never forget, because he learned it by experience."

PIGS RIVAL DOGS AND CATS AS PETS

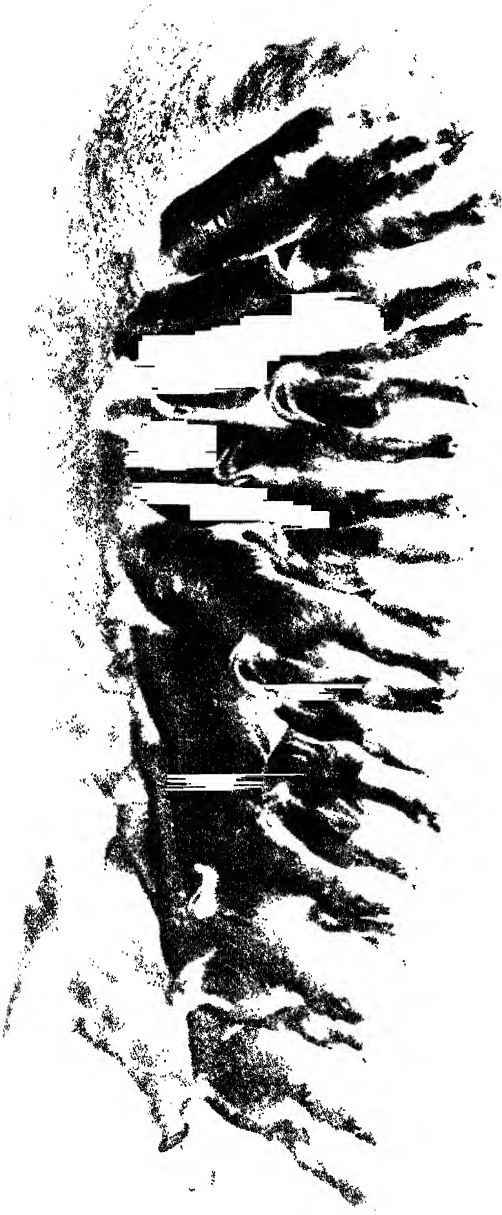
Many of the pig-club members write of their pigs with the same affectionate interest that other children speak of a pet dog, a cat, or a canary. Here, for example, is an extract from a letter by Earl West, of Garland, Oklahoma:

"Well, I shall tell you about my pig. It is looking pretty dressy since I have been feeding it digester tankage. It looks like it were fixing up for a trip. It carries its tail curled and walks as proud as if it were expecting to see town. Now I shall not disappoint him. I shall carry him to our contest on the 18th. I tell him to eat all I give him and I will do my best to get a ride on the train for him.

"He carries his fat nicely and walks up to his meals like a little boy and eats all

he can. I feed him corn, oats and tame weeds, and the wastage from my father's table since my digester tankage gave out. He seems to think it is good. The funniest thing is to see him eat and look at me and grunt as if to say, 'Early, you are so good to me—everything furnished. All I have to do is to walk up and eat.'

"Now if he wins no prize I shall never be sorry about feeding him, for he shall help be a comfort for my mother and little brother at home. Besides, I enjoy his being here. While I am a member of the pig club, I tell him he must not let me get beat, for this is my first effort to do anything in the club work. But if I do get beat I shall only keep trying. My two older brothers won valuable prizes last year in the corn and cotton clubs. I shall keep trying. I am sure I can win something some day. I have one acre in corn this year, one acre in kafir-corn, and am preparing my exhibits, also my seed



Photograph from E. Niebergall

A DOUBLE-DECKER

Among farm animals the pig ranks second as a producer of human food from a given amount of digestible matter consumed. The milch cow ranks first. After the pig come poultry, steers, and sheep, in their power to convert crops of the field into food for man.

kafir-corn and corn for another year, and shall send in my report and essay when the time comes.

"The chinch-bugs got in my kafir-corn, and the drought came on my corn, but mother says I must be patient. She says that those that have no misfortune die of young age. I have always found my mother true, and I shall be patient until I get through. I am 10 years old and can always find work to do."

TEACHING THE FARMER THROUGH HIS SON

The results which have attended the efforts of food-production specialists in club work among the young people have been in marked contrast to the comparatively slow process of inducing the adult farmer to adopt modern scientific methods in raising cereals, cattle, poultry, swine, and vegetables.

One explanation for this success is the fact that boys and girls assimilate new ideas more readily than their elders. Indeed, agriculture experts are finding that the easiest method of approach to the adult farmer and the housewife is through the sons and daughters, whose signal achievements in club work furnish concrete examples of the advantages to be derived from scientific farming and the scientific breeding of cattle, swine, sheep, and horses.

For example, no number of pamphlets or lectures could be so convincing to the Decatur County, Georgia, farmer with respect to the advantages of scientific pig feeding, as was the object-lesson furnished by his little daughter, who begged to be allowed to join the Decatur County Pig Club with the eighth pig of a litter. She was given the pig because the sow could only nourish seven pigs and the eighth otherwise would have starved. When the child's pig was 10 months old it weighed 225 pounds net, dressed as meat, besides yielding a 50-pound can of lard. This pig had been raised at a cost of five bushels of corn and the kitchen garbage. The other seven pigs of the litter, left to shift for themselves, averaged only 87 pounds each when butchered.

And what farm expert could have presented the story of scientific hog-raising

so forcefully to a Kentuckian as the triumph of that farmer's own pig-club son when both started even with litter-mate pigs purchased at eight weeks old? The records show that the boy's pig weighed 27 pounds when purchased, and gained 167 pounds in four months, at a cost of five cents a pound—a daily gain of one and two-fifths pounds on a ration of corn, shorts, and buttermilk. At the fair the boy's sow weighed 194 pounds and took a prize; the father's weighed only 50 pounds, and there was no record of what it had cost him.

MANY BENEFITS FROM BOYS' AND GIRLS' CLUBS

The benefits derived from the pig-club movement—and similar benefits are derived from all the other club movements of the so-called Extension work of the various States, in coöperation with the U. S. Department of Agriculture—are manifold. First and foremost, the clubs stimulate an interest in swine production and teach the boys (the farmers of the future) how to raise better and cheaper hogs by the use of improved blood and the growing of forage crops. The number of hogs raised on the farm is increased and the meat required for home consumption is produced instead of bought.

The pig club is complementary to the work of the corn club, showing the members how they can market their corn profitably through hogs. The home curing of meat is encouraged on the farm. The boys are instructed in a practical way in the management, feeding, sanitation, and prevention of disease of swine.

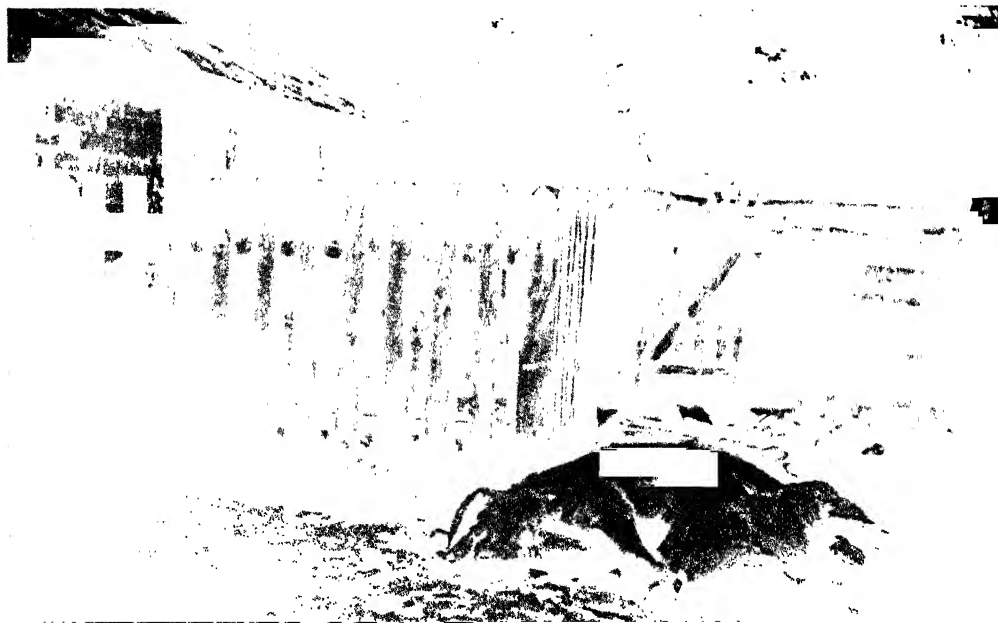
One of the chief advantages which is being derived from this movement is the means which it affords boys and girls of earning money for themselves while at home, and at the same time awakening a real and abiding interest in farm life—a powerful back-to-the-farm movement inaugurated at the very source.

While emphasis has been laid here upon the pig clubs, the canning clubs, poultry clubs, baby-beef clubs, potato clubs, corn clubs, and sheep clubs are no less vital to the welfare of the nation and to the increase of our agricultural re-



A PIG'S KISS

Photograph from E. Niebergall



Photograph by A. W. Cutler

PRACTICING THE SECOND PRINCIPLE IN THE PIG'S SCHEDULE OF LIFE—EAT, SLEEP,
AND GROW FAT

When the pigs are asleep the chicks become bold, a revised version of "When the cat's away." The biddy at the right is trying to make up its mind whether it is safe to approach any nearer and peck the insect which the owner of the pigs overlooked when the bristles were treated with lard and kerosene to remove vermin.



Photograph from Janet M. Cummings

A FAMILY OF WHICH ANY CLUB MEMBER WOULD BE PROUD TO CLAIM OWNERSHIP
But this is not an American sty-hold. This sow is rearing her litter in Australia, one of the great meat reservoirs of the world.

sources. They are interdependent and mutually stimulating. It frequently happens that one active boy or girl is a member of several clubs, doing equally efficient work in all. In other cases different members of the same family belong to different clubs and there is wholesome rivalry as to which will realize the greatest profit and capture most prizes in his or her particular field of activity.

THREE PRIZE-WINNERS IN ONE FAMILY

A notable instance of family coöperation is to be seen in the achievements of the three White boys of Norwood, Madison County, Tenn. Each sent into the county club agent his record book illustrated with excellent kodak pictures, and each picture was adorned with a small American flag in the corner, indicative of the patriotic spirit of these young soldiers of the commissary.

Bronson White raised 120 bushels of corn on his club acre, and after deducting

\$20.35 for expenses (including \$5 for rental of the land) he had a profit of \$129.66. He also won a \$10 prize in the boys' corn club contest, and with this money purchased from his older brother a registered Poland China pig, which he "thinks will make a prize-winner."

Robert White produced 140 bushels of corn on his acre, which was sold for \$175, giving him a net profit of \$153.88. With a part of this money and \$32 which he won in prizes he purchased half interest in a small flock of sheep, and in connection with this investment he adds the following postscript to the history of his corn-club activities:

"The sheep is one of the most money-making animals you can raise on the farm. Boys, just think about 18 pounds of wool off one ewe at 75 cents a pound and \$50 for her twin lambs at five months old—\$63.50 for wool and lambs. Then I took her to the fair at Jackson and won \$6 over Obion County's best sheep breed-



Photograph by A. Moscioni, from Lt. Adolfo de Hostos

PACKING PIGS TO MARKET IN PORTO RICO

A comparatively comfortable method of transportation for both man and beast; but if this native Porto Rican had practiced pig-club methods, he would have so much pork on his shoulders that he would scarcely be able to stagger under the load.



Photograph by Emil P. Albrecht

"A CORNER IN PIGS": MARKET DAY IN ST. BRIEUC, FRANCE

Scrubbed till its skin glows pink through glistening white bristles, the St. Briec pig, in its rope harness, is a thing to admire, no less than the many different types of headdress worn by these thrifty Breton women. Each type of cap bespeaks the village from which the wearer and her pig hail.

ers. Now, adding that to the other, she netted me \$69.50 profit, and I still have the ewe!

"Yet I have heard farmers say that they did not like sheep. But, boys, give me rich land to work, warm clothes to wear, and a stomach full of barbecued lamb, and Bob White does not mind putting his shoulder to the wheel."

A BOY'S PLEA FOR MORE HOGS

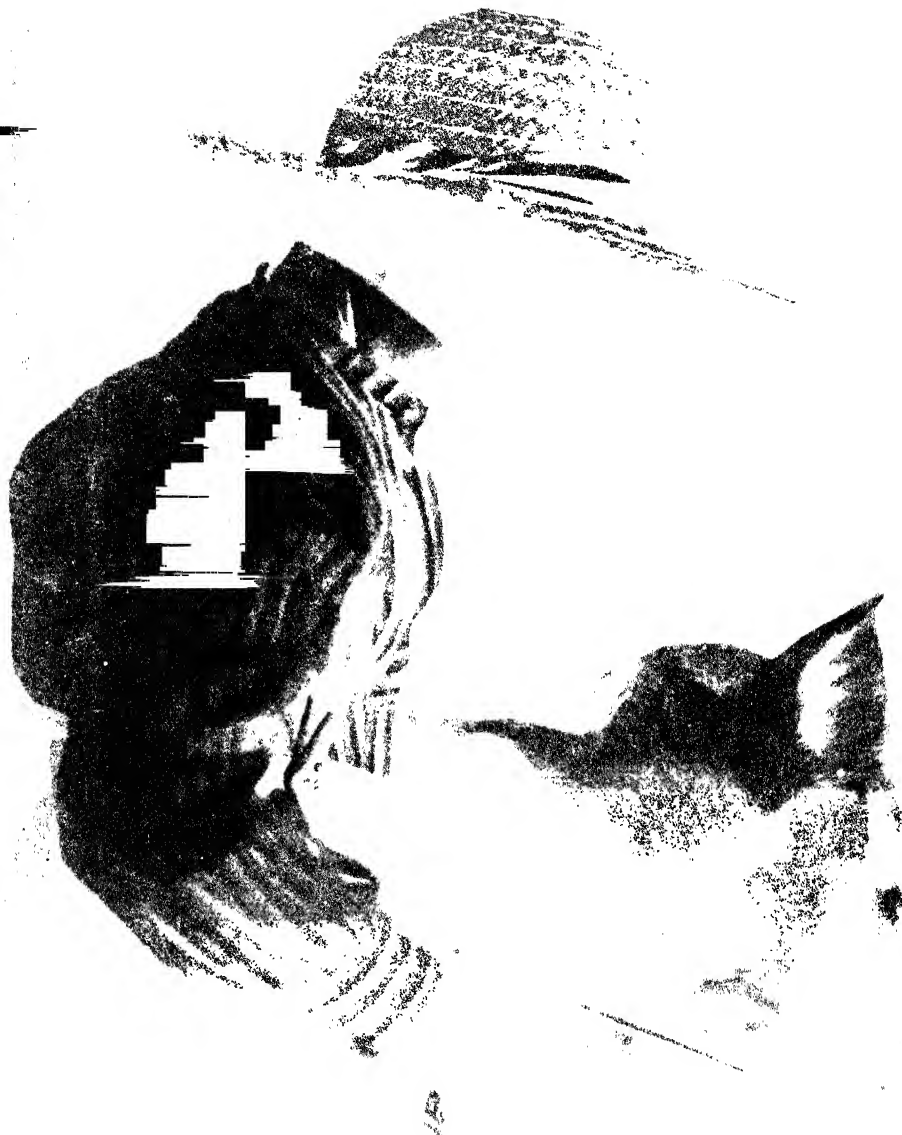
The third and oldest brother, J. B., raised 145 bushels of corn on his acre, the net profit on which was \$159.90.

With the profits from his previous corn-club crop, J. B. purchased 20 pigs, which then weighed 33 pounds each, but which at the time of his report averaged 402 pounds. He enclosed with his report a picture of three of his porkers, "Billy Sunday," "Mattie L.," and "Tennessee Bell," and of these he writes:

"Billy Sunday won first prize under one year in the Poland China ring. Mattie L. did the same thing in her class. Tennessee Bell, the little Hampshire pig I won in the boys' corn club last year, weighed 33 pounds. I brought her home in a cracker box. This year she won first prize under one year in the Hampshire ring, and also champion over all breeds and ages.

"These pigs were raised on crimson clover, alfalfa, and soy-beans, with very little corn—about one ear a day. They are now running on a field of soy-beans and peas without any corn.

"Boys, we ought to raise more hogs and especially brood sows to produce an early fall litter. We can do it if we will provide good grazing, so that they can get a large part of their food. The forage crops should be grown to save the corn, so that we can raise the pigs much cheaper.



Photograph by G. Heurlin

"SPEAK FOR IT"

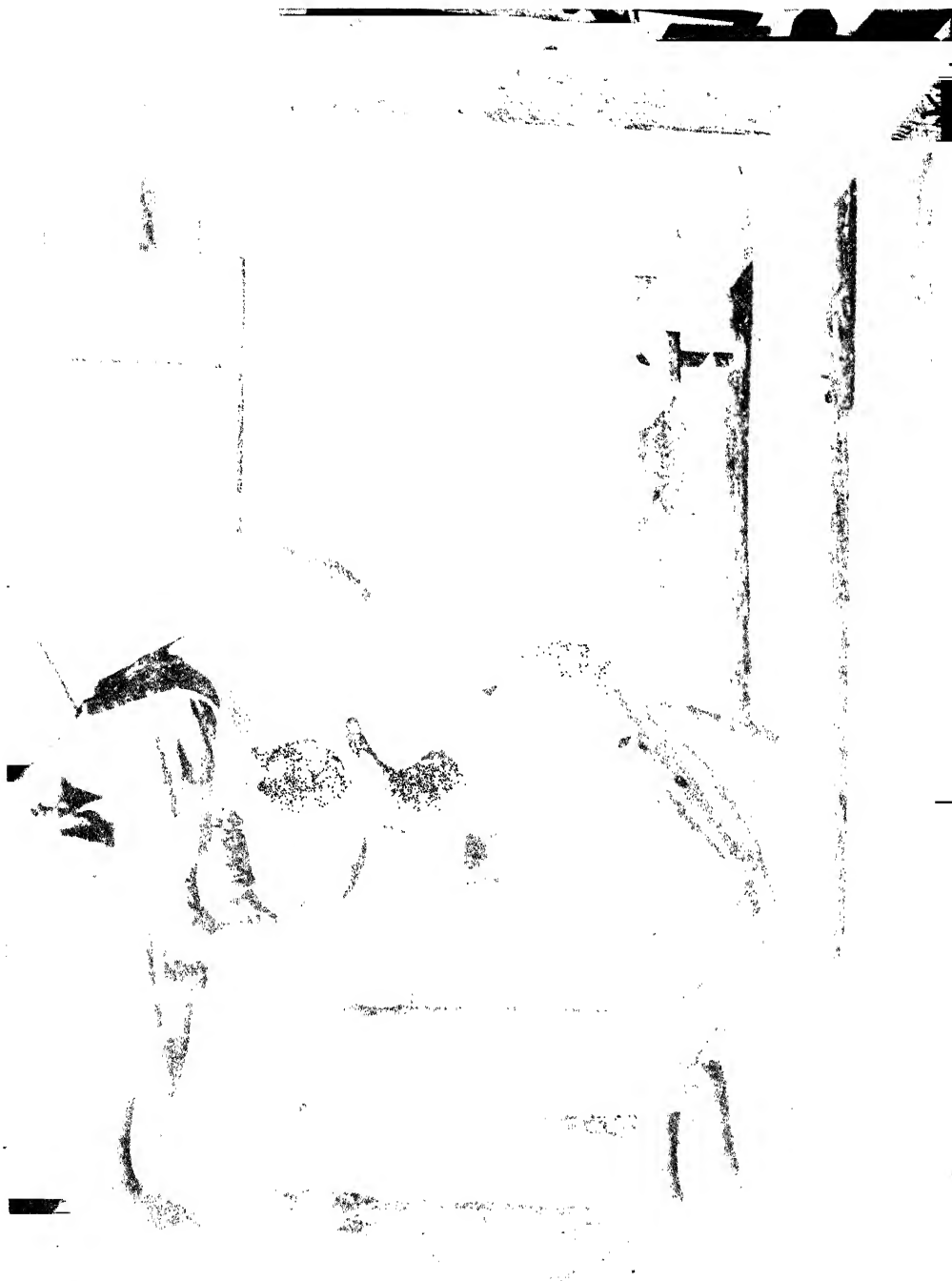
Many of the pig-club boys and girls manifest the keenest affection for their pork-producing pets, and occasionally there is a most pathetic note in some of the letters received by the pig-club agents when lightning, a train, or hog cholera kills the animal upon which time and labor have been lavished. "You can mark my name out," wrote one boy. "My pig is dead; I ain't got no money to start with again and no feed. I am in a bad fix for starting and I will have to give it up."



Photograph by G. Heurlin

PURE-BRED AND HAND-FATTENED

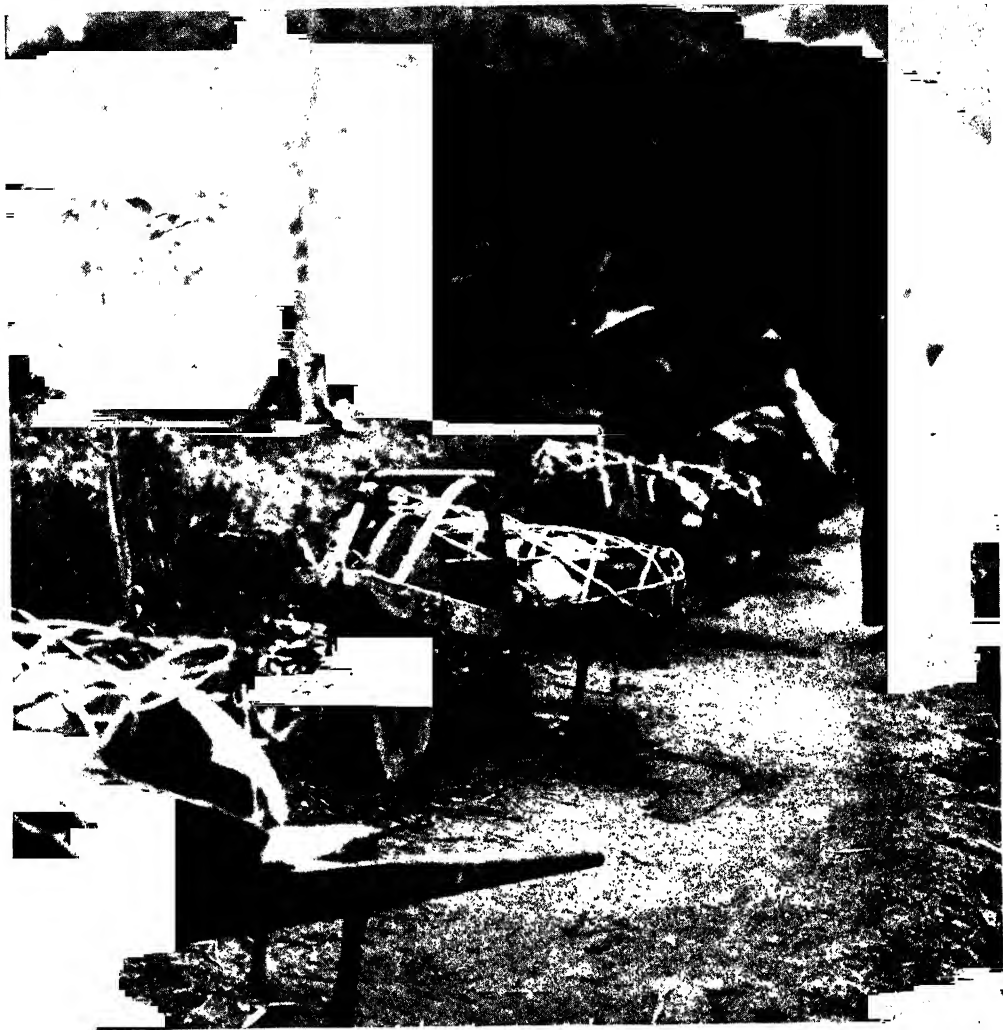
There are two distinct types of swine—the lard and bacon types. The lard type is much preferred in the United States, while the production of choice bacon is more general in those countries where the feed of the hog is more varied and where corn is not the principal fattening grain.



Photograph by G. Heurlin

FOUR LITTLE PIGS

Instead of being the unclean, insanitary creature almost universally depicted, the pig is much more cleanly in its habits than the dog. It makes a desirable pet for youngsters living in the suburbs as well as on the farm.



Photograph by G. W. Groff

WICKER-BOUND PIGS BEING TRUNDLED TO MARKET ON CRUDE WHEELBARROWS:
CANTON, CHINA

The thrifty yellow race knows how to make the most of its meat resources. A poor pig is seldom seen in China.

"Boys, stay on the farm and come to see me after hog-killing time and I will feed you on back-bone, spare-ribs, sausage, ham, and red gravy."

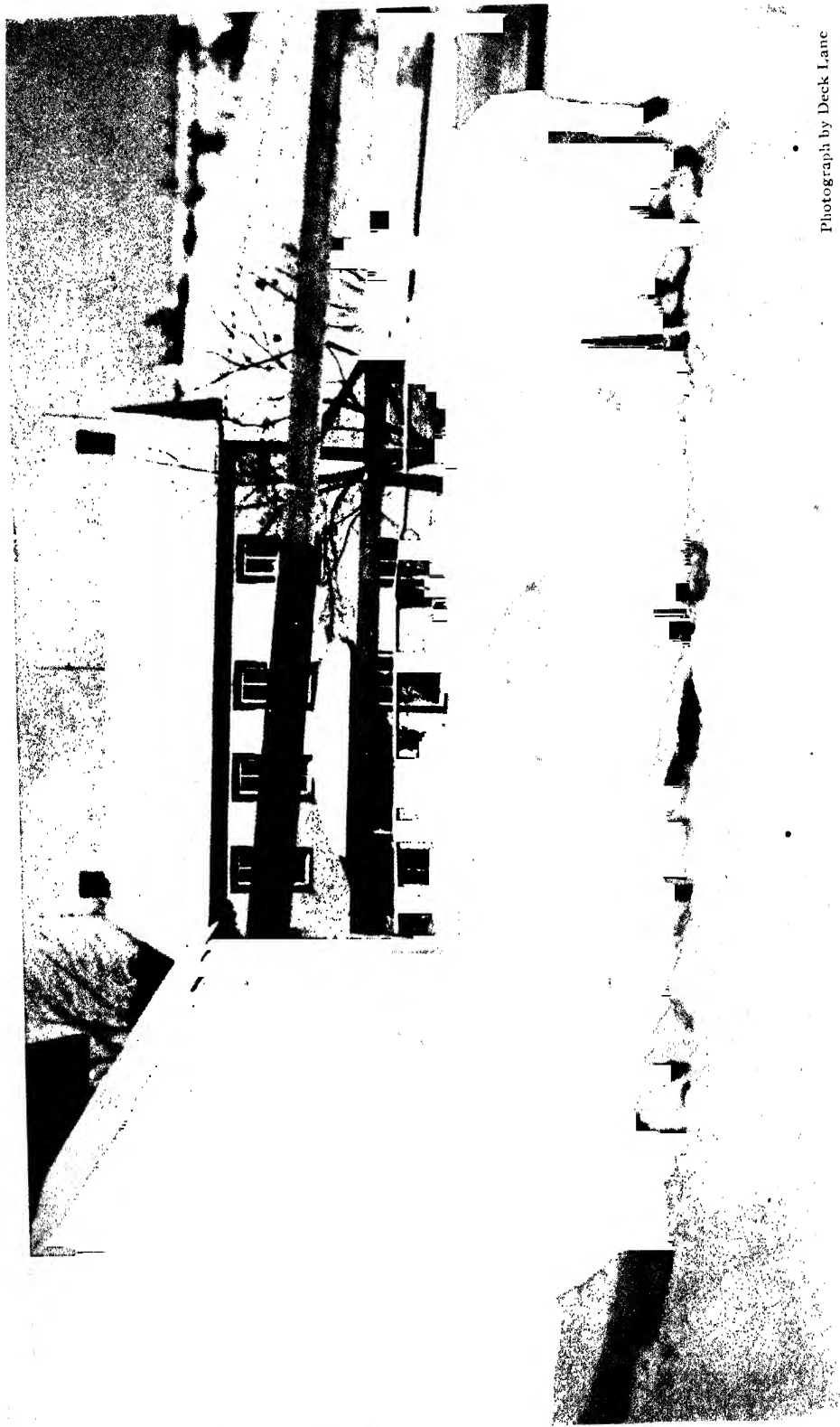
In the hands of such youthful farmers the ample productivity of American soil is assured.

HOW YOUNG PATRIOTS MAY ENLIST

All young patriots who are willing to offer their services in the cause of producing more food for our own soldiers

and our allies, and who at the same time wish to earn a handsome profit on their investment and experience the joy of watching growing things—pigs, sheep, corn, calves, etc.—should write either to the Agricultural College of their State or to the Department of Agriculture, Washington, D. C., stating in which club they are interested.

A State or county agent will immediately answer such inquiries and furnish accurate information as to the best meth-



Photograph by Deck Lane

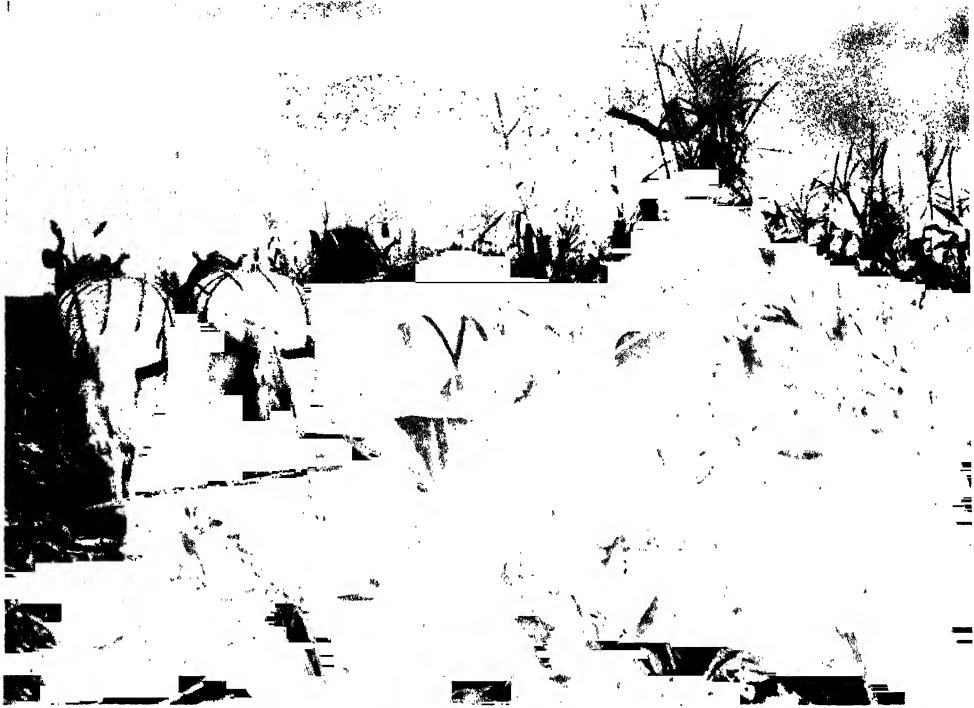
ON A PENNSYLVANIA FARM : THE PET-SHEEP MOVEMENT IS FINDING FAVOR IN THE EASTERN AS WELL AS THE WESTERN STATES

A sheep can be raised as cheaply as a dog and ordinarily will produce \$5 worth of wool annually. When reduced to mutton it will average \$10 in value. A sheep-club boy in Tennessee reports having secured 18 pounds of wool from one ewe (\$13.50), and sold her twin lambs when five months old for \$50—a total of \$63.50 for wool and lambs—and he still has the ewe (see page 185).



Photograph by R. R. Salloos

PICTORIAL EVIDENCE WOULD SEEM TO INDICATE THAT CANADA HAS ORGANIZED BOYS' PUMPKIN CLUBS



AMERICAN FARMERS ARE BEING TAUGHT SCIENTIFIC AGRICULTURE THROUGH THEIR SONS AND DAUGHTERS

The corn clubs and pig clubs are closely related. It was to provide a profitable method of marketing the boys' corn harvests which first suggested the idea of pig clubs to a rural school superintendent in Caddo Parish, Louisiana, eight years ago.

ods of raising pigs, of planting corn, etc. This information is supplied without charge, and the government agents will gladly give expert advice, call wherever possible to see those interested, and enroll them as club members, all without cost to the individual.

No attempt has been made in this article to set forth the methods of pig-raising or to describe the relative merits of such breeds as the Duroc Jersey, the Poland China, the Berkshire, and Hampshire. All these subjects are treated in very complete and interesting detail in the various Department of Agriculture bulletins, which are sent free, upon request.

Boys and girls living in the New England and Middle Atlantic States are especially urged to join the club movement. Their proximity to many large cities insures a constantly brisk market for farm, dairy, and meat products, and all food raised in this section of the country not only adds to the general larder of the

nation, but relieves to some extent the ever-increasing transportation burden which must be borne by the government-operated railroads.

From April to November the weather is sufficiently mild in the North and East to warrant the raising of pigs in the open, without the outlay of large sums for housing equipment.

Among the Eastern States, Massachusetts has been commendably active in boys' and girls' club work. In that Commonwealth the popularity of the pet-pig movement has been second only to the interest shown in poultry clubs. New York promises to do much in this direction also, although the club work was not begun in that State until March, 1916.

Particular emphasis should be placed on the fact that a large tract of land is not requisite to the keeping of a pet pig. On a small lot in the suburbs a young porker can be fattened at negligible cost, being fed largely on kitchen waste.

BILLIONS OF BARRELS OF OIL LOCKED UP IN ROCKS

BY GUY ELLIOTT MITCHELL

OF THE UNITED STATES GEOLOGICAL SURVEY

IS THE United States facing a gasoline famine? Shall we be required to forego automobiling except to meet the stern necessities of war and of utilitarian traffic? Are our petroleum fields showing signs of exhaustion?

The output of petroleum has not yet begun to diminish; statistics show that it is still increasing; yet the downward trend of production from the present oil fields is plainly in sight.

The war has made a sudden and enormously increasing demand on the oil fields of America, and though the industry has never been so feverishly active as it is now and the output never so large, the truth is that the demand has not been entirely met. And during the next year and as long as the war lasts the demand will be ever increasing, ever more pressing.

Many of the host of larger vessels that we are now building will be equipped with oil-burning furnaces, and the vast swarm of airplanes that we are building, as well as the thousands of war automobiles and trucks that we are turning out, will consume an enormous quantity of gasoline. Yet no great new oil regions comparable with the mid-continent or California fields are being discovered, and it is questionable whether any will be, for our oil geologists have pretty thoroughly combed the accessible oil areas. What, then, is the answer?

It is just at this juncture that we have made a discovery that has disclosed what is undoubtedly one of our greatest mineral resources—one that should supply the needs of the war, and that for generations to come will enable the United States to maintain its supremacy over the rest of the world as a producer of crude oil and gasoline and incidentally of ammonia as a highly valuable by-product. We have discovered that we possess mountain ranges of rock that will yield billions of barrels of oil.

For many years travelers going west through the Grand River Valley of Colorado and into the great Uinta Basin of eastern Utah have looked from the windows of their Pullman cars on the far-stretching miles and miles of the Book Cliff Mountains, little realizing that in these and adjoining mountains, plainly exposed to view, lay the greatest oil reservoir in the country—the oil shales of Colorado, Utah, Wyoming, and Nevada.

ROCKS THAT BURN FREELY

These shales, it is true, were known to yield oil. Campers and hunters in building fires against pieces of the rock had been surprised to find that they ignited that they contain oil. This fact was looked upon, however, as only another of the natural curiosities of the great West and burned, and investigation showed and little or no attention was paid to it because of the seemingly inexhaustible pools of crude petroleum found elsewhere under great areas.

In connection with its investigations of the undeveloped mineral resources of the country the United States Geological Survey has recently made special studies and tests of these oil rocks and has brought to light two important facts: First, that our western shales are phenomenally rich in oil, and, second, that in foreign countries, particularly Scotland, much inferior shales are today successfully mined and worked as a source of oil and other commercial products. The industry in Scotland is 70 years old and is still in a highly flourishing condition.

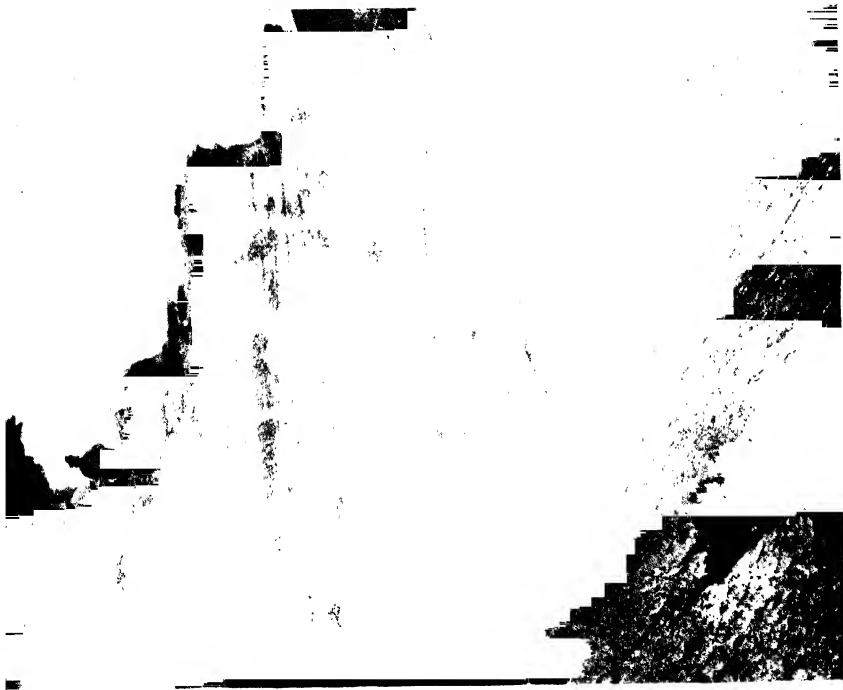
OIL, PROFITABLY DISTILLED FROM SHALE IN SCOTLAND

The Scotch shales run only about 25 gallons of oil to the ton; yet the principal operating companies competing with the petroleum industry pay annual dividends averaging 18 per cent. Rock producing



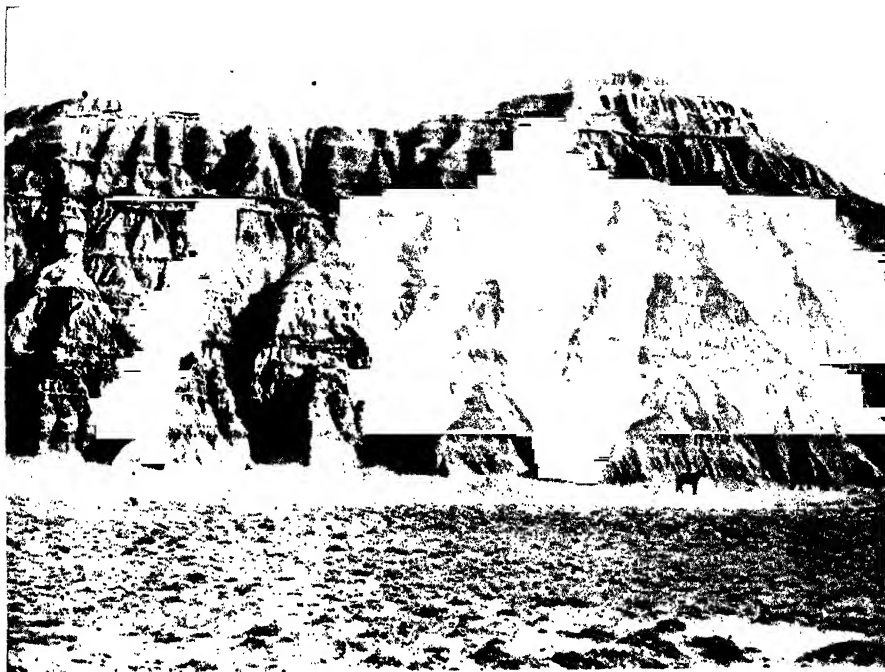
Photograph from U. S. Geological Survey
**GEOLOGICAL SURVEY MEN SAMPLING ONE OF THE GREAT OIL
 SHALE BEDS NEAR GREEN RIVER, WYOMING**

As the great Creator, through His servants of old, caused water to flow from the rock in the wilderness, so, through twentieth century science, He is causing oil, for ages locked up in the shales of America, to be released for the relief of human necessity.



Photograph from U. S. Geological Survey
**GOVERNMENT GEOLOGISTS AT WORK ON AN OIL SHALE
 DEPOSIT NEAR WHITE RIVER, COLORADO**

The results of the experiments in distilling from Colorado oil shale have been so promising that a reserve of 132,000 acres of the richest region has been set aside by the government as a source of the oil supply for the United States Navy.



Photograph from U. S. Geological Survey

IN THESE WYOMING ROCKS ARE LOCKED MILLIONS OF BARRELS OF OIL

These deposits of oily rock are often massive in extent as well as in thickness. Beds were recently reported in one Western State over an area of 1,500 square miles, averaging 20 feet in thickness and yielding at least 36 gallons to the ton.

even as low as 20 gallons of oil a ton is yielding good dividends. The shales in the western United States are far richer in oil than those of Scotland. Many tests made by the Geological Survey show that the American rocks contain 40 to 50 gallons to the ton and those in one deposit tested 90 gallons, or more than 2 barrels, to the ton.

To extract the oil, the rock is distilled at a low temperature. So simple is the process that the geologists who surveyed the fields carried small testing retorts around from place to place to determine the oil content of various specimens.

In the Scotch plants the rock is heated in retorts arranged in banks of four over a single fire-box, and a unique feature of the process is that the gas derived from the shale is the fuel used for obtaining the oil and other products. The retorts are grouped in benches of 64 and each retort reduces about 4 tons of rock a day.

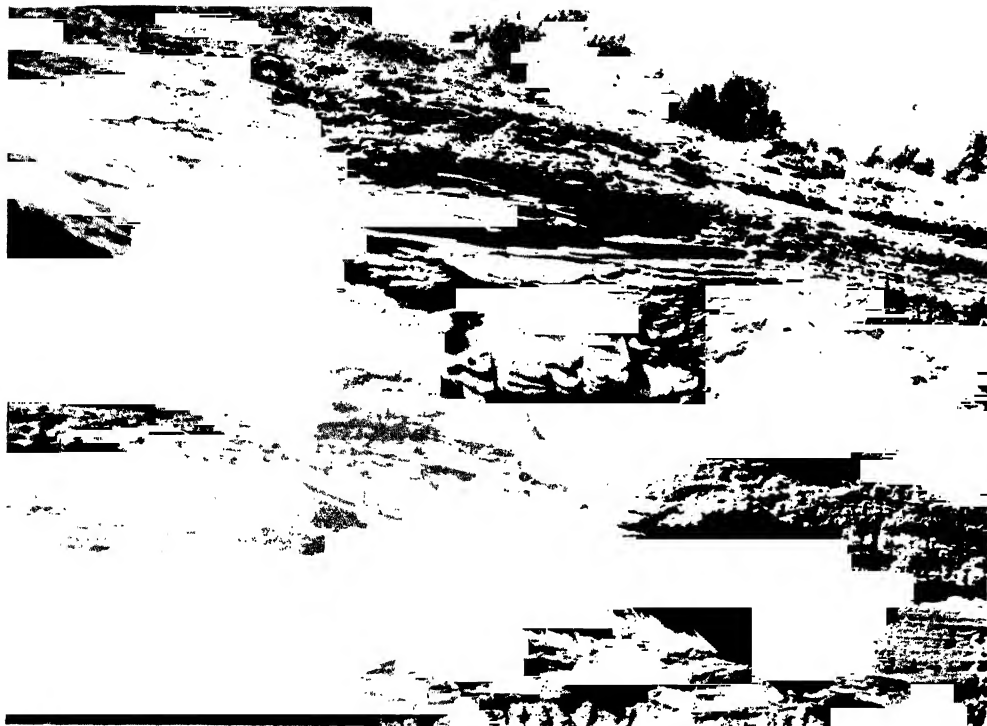
Some 3,000,000 tons are treated annually. The vapors pass from the retorts into condensers in which the crude oil is deposited, and then on into a chamber in which the ammonia is collected.

The Scotch shales yield gasoline, illuminating, lubricating, and other oils, paraffine wax, and sulphate of ammonia, besides a considerable quantity of liquid fuel and the gas that is used in the plants.

QUANTITY OF OIL IN AMERICAN SHALES
ENORMOUS

The total production of petroleum in the United States up to 1918 has been 4,255,000,000 barrels, and the possible future production, or the total reserve in the ground—and some of it lies very deep—is estimated by the Federal Government at about 7,000,000,000 barrels.

How does this petroleum compare with the known oil-shale reserve? The quantity of oil that can be extracted from the



Photograph from U. S. Geological Survey

AN OUTCROP OF RICH OIL SHALE IN UTAH

The flexibility of the rock indicates its heavy oil content. The oil shales of Scotland, which have been profitably worked for 70 years, yield about 25 gallons to the ton of rock. The shales of the western United States run about 40 or 50 gallons to the ton and those of one deposit gave 90 gallons to the ton.

shale is so huge that the petroleum reserve becomes almost insignificant by comparison. As a result of only a partial investigation, it is estimated that the oil in the shale ranges of Colorado alone amounts to 20,000,000,000 barrels. There are mountains—indeed, ranges of mountains—which for many miles carry thick beds of rock that yield 30 to 50 barrels of oil to the ton.

More recently the State geologist of Colorado has reported that in northwestern Colorado beds of commercially workable rock that average more than 20 feet in thickness and that will yield at least 36 gallons of oil to the ton are found in an area extending over 1,500 square miles. These figures show a content of 24,000,000 barrels of oil to the square mile, or a total of 36,000,000,000 barrels for the area. Either twenty billion or thirty-six billion is sufficiently impressive.

The Geological Survey also estimates that 300,000,000 tons of sulphate of ammonia, worth, at before-the-war prices, about \$60 a ton, could be recovered as a by-product in the extraction of the oil. This by-product would be sufficient to enrich most of the farms in the great Mississippi Valley.

In addition to the oil rock in Colorado, that of Utah must be considered. The government is now investigating these deposits in detail and has already stated that they are probably as extensive as those in Colorado and are equally rich in oil. Oil shales have been examined also in Nevada, Wyoming, California, Montana, and other States. Tests of specimens from Wyoming show from 30 to 50 gallons to the ton, and samples from Nevada have produced from 40 to 100 gallons of oil to the ton. One 10-foot

bed in Nevada yielded oil at the rate of 13,000,000 barrels to the square mile.

DEPOSITS IN EASTERN STATES

But the West has no monopoly of the oil-shale resource. Deposits have been examined by the government in Illinois, Kentucky, Ohio, Pennsylvania, Tennessee, West Virginia, and Indiana, some of them testing out with a high oil content. An examination of the black shale of southwestern Indiana shows that it underlies about 16,000 square miles, and although the oil content of much of it is less than that of the western shales, and some of it is too low in oil to be worked commercially, the actual content for the area in Indiana alone would be 100,000,000,000 barrels.

Some of the eastern shale that is very rich in oil overlies extensive coal beds, which are being mined by the "stripping" method, so that the oil rock must be removed in any event to get out the coal. This shale could therefore be mined by steam-shovels without additional cost, as it is a necessary preliminary to the coal-mining.

The potential value of this immense oil resource of America is almost beyond comprehension. Enough oil is held in these natural reservoirs to fill many times over every tank, cask, barrel, can, and other container of every kind in the world.

Until recently the oil shales of the United States, particularly those of the Western States, have been referred to by the government geologists as a reserve available for extraction whenever the demand and the price shall become great enough to warrant the establishment of a new industry to supplement the supply of petroleum from the oil fields. This time is now at hand.

The extraordinary demands of the war are already indicating the approaching insufficiency of the output from our petroleum fields, and experiments in the utilization of oil shale are already being made in Colorado. Plants are being erected, oil is being distilled, processes are being tested, and a steadily increasing output is soon to be expected. So substantial is this resource considered that the government has set aside as a special



Photograph from U. S. Geological Survey

HAND DRILLING TO SECURE UNWEATHERED SAMPLES OF OIL SHALE

The deposits of oil shale in the Rocky Mountain region lie for the most part near the surface and can be mined by steam-shovels. By situating the reducing plants in the valleys, gravity may be utilized in transporting the rock to the distilleries.



Photograph from U. S. Geological Survey

OLD SHALE DISTILLERY NEAR JUAB, UTAH, USED BY MORMONS A GENERATION AGO

When the oil is distilled from the impregnated shales there comes with it a great supply of those yellowish crystals we call sulphate of ammonia—a fertilizer so rich that it would make a garden out of an old abandoned field. Three hundred million tons of this great soil vitalizer lie locked in the shales of Colorado alone, waiting to be released by the key of industry.

reserve for the American Navy 132,000 acres of the richest oil-shale land in the West.

BEWARE OF FAKE PROMOTERS

It is not to be understood, of course, that any farmer or rancher who may happen to have oil shale on his homestead can produce oil at a profit. Suc-

cessful oil distillation will require large and expensive plants, well financed and scientifically managed, as in any other large industry.

It is by no means a poor man's proposition; but neither, on the other hand, is it a highly complex and involved industry, such, for instance, as beet-sugar manufacture, while the fact that oil dis-



Photograph from U. S. Geological Survey

NEW EXPERIMENTAL, OIL, STILL NEAR DEBEQUE, COLORADO

No man who owns a motor-car will fail to rejoice that the United States Geological Survey is pointing the way to supplies of gasoline which can meet any demand that even his children's children for generations to come may make of them. The horseless vehicle's threatened dethronement has been definitely averted and the uninviting prospect of a motorless age has ceased to be a ghost stalking in the vista of the future.



Photograph from U. S. Geological Survey

WASH DAY IN A U. S. GEOLOGICAL SURVEY CAMP

Campers and hunters in the West long ago discovered that oil shale would burn. A few rich samples are here supplying the heat for the camp laundry.

tillation is well established in other countries is tremendously to the advantage of prospective development in the United States.

Unfortunately the discovery of the immense oil resources of America, contained in its oil-shale deposits, will doubtless be attended by misfortune for the unwary—those who invest carelessly in the stock of fake or “wild-cat” oil companies, organized by get-rich-quick schemers who are intent upon exploiting the gullible

public rather than the development of oil-shale properties. Such schemers, like camp-followers, appear in the wake of every great discovery of mineral wealth and they have always found the “oil fields” a particularly lucrative one for their operations.

AMERICAN OIL-SHALE INDUSTRY WILL FAR OUTSTRIP SCOTLAND

The success attained by the oil-shale industry in Scotland indicates far greater



Photograph from U. S. Geological Survey

RICH OIL SHALE LEDGE OUTCROPPING NEAR GRAND VALLEY, COLORADO

Although the oil reserves of the United States are greater than the amount produced in the entire world from the birth of the industry until now, yet the output at the present time is such that it would exhaust the reserves in 30 years. But now comes the discovery of such an abundance of oil in American shales that all the oil produced in the whole world in the entire history of the industry is only a drop in the bucket in comparison with the supply the rocks offer us.



Photograph from U. S. Geological Survey

A MOUNTAIN CONTAINING MILLIONS OF TONS OF RICH OIL ROCK AT THE VERY DOOR OF TRANSPORTATION: MOUNT CALLAHAN, IN THE GRAND RIVER VALLEY, COLORADO

The immensity of the coal beds of America is overpowering, and yet they represent but a small percentage of the coal originally laid down. Between the glaciers that ground out billions of tons and the crust-crumples of the earth that buried other billions-of tons, great as is the amount of coal left, it is only an insignificant share of the original deposits. But though most of our coal was taken from us before we came upon the earth, some of it comes back to us in one shape or another. Petroleum is one of its proxies; oil-bearing rock is another.

success for the industry in the United States. Not only is the oil content of the American deposit larger than that of the Scotch—in some cases more than three times as large—but the American rock can be mined more cheaply.

The Scotch shales lie far below the surface and must be mined by hand and hoisted through shafts like coal or hauled up inclines. Most of the Rocky Mountain shale lies from a few feet to 2,500 feet above the valley floors and much of it can be mined in a wholesale manner by steam-shovels and lowered by gravity to the reducing plants.

OIL FORMERLY DISTILLED FROM SHALE IN PENNSYLVANIA AND UTAH

The Scotch shales occur in irregular beds which here and there thin out and have been thrown into geologic faults and folds that greatly increase the cost of mining. The western shales, on the other hand, are more uniform in thickness and lie in a horizontal position. Despite their handicaps, the Scotch deposits are worked at a large profit, yet their average content of oil is only about 25 gallons to the ton, whereas vast quantities of easily mined American shales that lie in benches 6 to 10 feet thick will average perhaps a hundred per cent more oil.

Oil-shale distillation is not new in the United States; yet it is doubtful if there are many people alive who remember anything about the earlier industry. Before petroleum was discovered in Pennsylvania, about 50 small companies in the eastern United States were crudely distilling oil from shales; but after subterranean pools were discovered these companies went out of business.

Long ago the Mormons also distilled oil from shale near Juab, Utah, where the ruins of an old still can yet be seen. We are now about to return to this discarded industry and produce hundreds of millions of barrels of oil where formerly

the output was comparable to the production of oil from sperm whales.

AMERICA'S IMMENSE MINERAL WEALTH

The discovery of these vast deposits of oil-bearing rock in the United States, the petroleum content of which can be estimated in nothing less than hundreds of billions of barrels, is one more evidence of the abounding wealth of the North American Continent. No sooner does one of our resources show limitations in production and the pessimists begin to cry, "What shall we do when our reserve is gone?" than immense additional deposits or satisfactory substitutes are discovered.

During the last few years petroleum, with its most valuable constituent, gasoline, has become one of our most vital resources, so that even the most cheerful optimist might well begin to question the immediate future prospects of the industry; but with thousands of square miles of rock lying above ground, within sight of trunk-line railroads and constituting an unfailing oil reservoir, we can feel assured of a supply of gasoline for many generations to come.

The United States is indeed a country blessed by a generous Providence. Germany, to supplement its stock of petroleum and gasoline, laboriously raises potatoes from which to distil fuel alcohol; but here in America there are mountains of oil rock which can be blasted and steam-shoveled and transported by gravity to great retorts which will turn out oil and fertilizer in limitless quantities.

The production of oil in this country, instead of decreasing, will continue to grow; it will even, because of the shale resource, greatly increase its present immense output of 340,000,000 barrels a year and will keep pace with the enormously increasing demand. No one may be bold enough to fortell what tremendous figure of production may be reached within the next ten years.

SHOPPING ABROAD FOR OUR ARMY IN FRANCE

BY HERBERT COREY

FOUR hundred shiploads of things the American Army needs in France have been bought in Europe.

I know of no more blunt and unpromising way of beginning this story of a big job. It lacks color and voltage. It really should be illustrated by a diagram showing a procession of four hundred tall ships sailing into a port in France, each loaded down to the captain's quarters, while a fleet of toothless U-boats gives way to *furor Teutonicus* on the side lines. That would bring home to the reader what this achievement of the Purchasing Board in France really amounts to.

Each ton bought in Europe lessens by 2,000 pounds the strain on the tonnage line that connects the American Expeditionary Force with its home base. One might go into the dollar feature of the situation and show that each ship will cost the American Government not less than \$10,000 a day, and that they will average 60 days to the round trip; but that phase is relatively unimportant. The essential point is that an enormous ocean shipment, with its attendant risks and delays, was avoided in this way.

SHORTAGES IN ALL DEPARTMENTS EXCEPT THAT OF COURAGE

The 400 shiploads only include the material bought by the Army Purchasing Board in France. A huge quantity of other goods has been bought by the commanding officers of units, these ranging from the day's rations to footwear and ready-made huts. Such purchases, however, are of the hand-to-mouth order and only satisfy the moment's needs. The greater purchase may be charged to capital account. The goods were needed for permanent equipment. They are the shelves and counters needed for Uncle Sam's new business abroad.

Every one now knows the conditions under which the American army began

operations in Europe. Some thousands of men had been hastily gathered together, herded on steamers, and pelted off to France. Probably every one knows that, thanks to our failure to take out insurance before our house caught fire, this first expeditionary force only outwardly resembled an army. Seventy-five per cent of the men were rookies; some of them took their first steps before a drill sergeant on board ship. The bureaucratic chair-fillers at Washington, who used to send men to Manila wearing the clothes designed for blizzardly afternoons on Skagway Pass, were living up to their own best worst. There were shortages in every department except that of courage.

In the United States every one became busy—and talkative—at once. The columns of good news about things that were sure to take place, if nothing happened, must have sent thrills down the backbone of every good American. In France, General Pershing had no time for prognostication and hurrah.

Persons who think they know commanding generals who have had harder tasks than Pershing in this war are invited to name their candidates. He was not only responsible for those preliminary arrangements of a purely military character, which will lead to victory later on, but he was obliged to create overnight a huge business organization. He became the head of an enterprise that could put the Standard Oil octopus in its pocket and never feel it squirm.

SOME OF THE DIFFICULTIES OF THE SITUATION

The American army is 3,000 water miles away from its home base, in a country that is increasingly feeling the strain of more than three years of war. The number of Americans in France was added to each week.



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CANNED GOODS ARE A STAPLE OF THE AMERICAN SOLDIER'S DIETARY IN FRANCE

"But 'airtight' take up a frightful lot of space on shipboard, and besides, there is plenty of fruit to be had in France. To bring American canned goods to a country where every peasant makes a pet of a pear tree is like carrying coals to Newcastle. So the tin is to be brought over in sheets and made into cans in French shops, and next summer the farm women of France will put up canned goods for American soldiers."

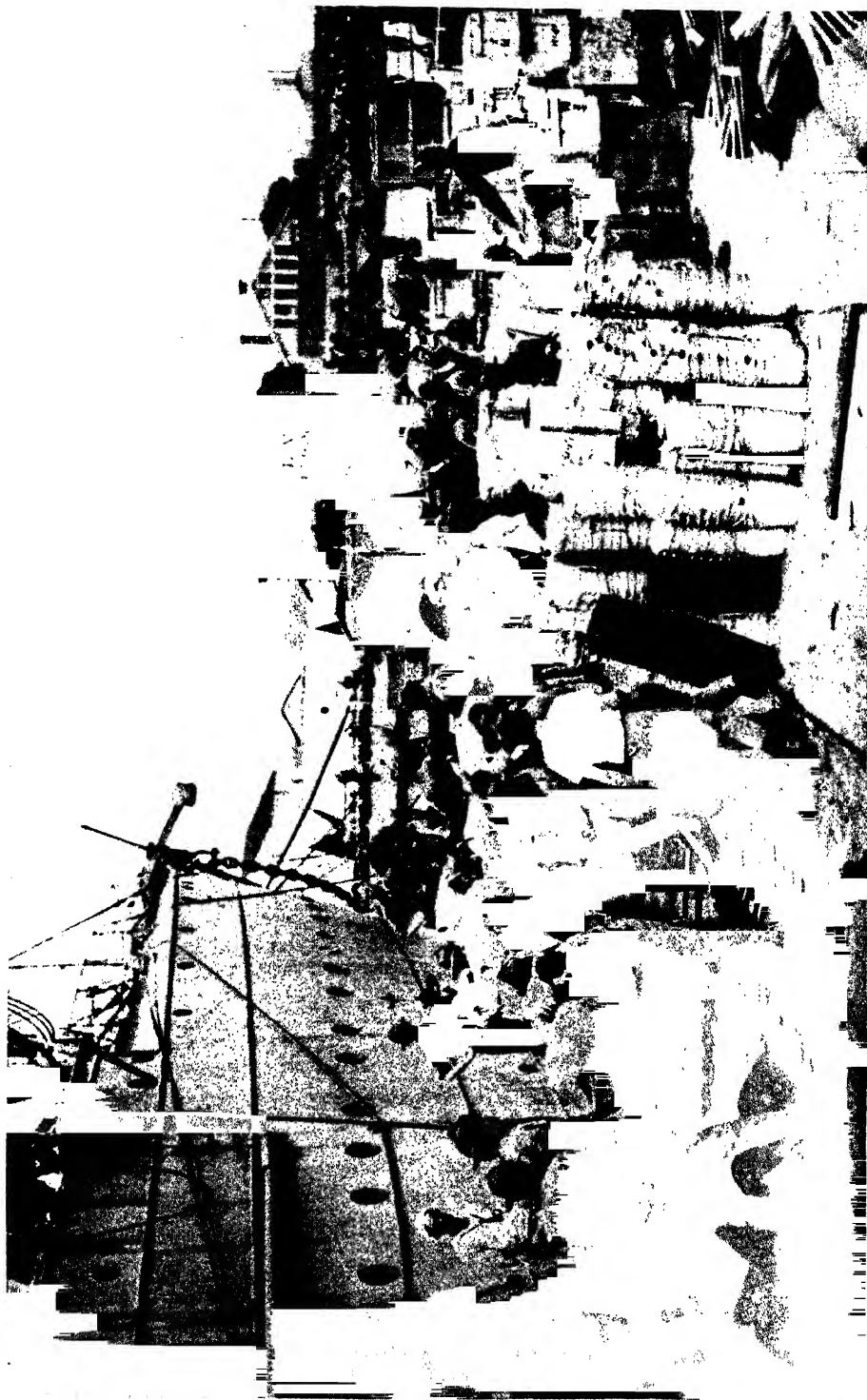
With that growth of the army the daily needs for clothing and food grew in proportion. Reserves must be built up to provide against possible hard times ahead. Artillery must be furnished, for Uncle Sam reacted with a jerk to the discovery that the squirrel rifle of our daddies is no longer useful, there being few squirrels in France. Transportation must be furnished on an unprecedented scale. New railroads must be built and equipped and old railroads furbished up. Three-ton camions take the place of mules in hauling food for a modern army; but mules are also needed.

As the wants increased, so did the difficulties. U-boats are daily sunk in the editorial columns, but manage to maintain a certain liveliness on the high seas. No particular genius was required to demonstrate that every possible pound should be bought on the European side of the

Atlantic, to loosen the tension on tonnage. But genius was needed in the buying, in order that America's allies should not be hampered. France and Great Britain and Italy are taking practically all the European market can supply, and their troops are fighting. It would not be good strategy to rob fighting forces to favor an army which is practically non-combatant as yet.

WHERE KITCHEN DIPLOMACY ENTERED

A matter of kitchen diplomacy entered into the problem also. The moment that American food purchases began to swell the prices in the village markets the French housewife would certainly protest. Her budgetary curve has been downward, for the most part, while the cost-line of cabbage and sugar has been steadily warping up. It would never do to allow the deep American pocket to



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LOADING A TRANSPORT WITH TROOPS AND SUPPLIES FOR FRANCE

"Every business operation is figured in tonnage terms nowadays. The great question is how the tons can be saved. Almost as soon as the Americans reached France the camp buckets and pots and kettles and pans were identified as space-wasters in shipholds. So the tin and galvanized iron are now taken over in the raw. Henceforth these minor and clangorous items will be manufactured in French workshops."

enter into competition with her slender purse. It would neither be wise nor, as Americans say, "decent."

So a formula was worked out for the buying. It might be stated something after this fashion:

"Save tonnage today if we can pay back tomorrow; mortgage the future.

"Always give the fighting forces the first chance.

"Ladies first."

Some one suffered from a constriction of the imagination when the body that does the buying in Europe was named the Purchasing Board. It is libeled by so tame and commonplace a title. Its members make purchases, to be sure, but that is only one phase of its activities. Now and then it lapses into diplomacy. It negotiates with European labor and adjusts the American machines and ways of doing things to continental men and women. It is in the manufacturing business. It is turning over every shop in neutral Europe in search of raw material. And it all began in the mildest way possible.

GENERAL PERSHING'S BIG TASK

General Pershing began it, of course, for in the army all things begin and end with him. One reason why his job makes such a tremendous appeal to the imagination is that it is this sort of a job. He is not only creating an enormous business organization, but he is catching the men to run it. Sometimes he does not catch the right man, and then he has to take a few minutes off to catch the wrong man and fire him. But an organization is being created. When it gets on its feet it will stand comparison with any organization in the world. It would be folly to say that it can stand alone today.

"I must have coal," he told the man who is today the chief purchasing agent. "Go out and buy it."

I have promised the chief purchasing agent that I will not use his name, but it is only fair—to the army—to say that he was the head of a great bank in a great mid-western city. He was a business man, too, of the sort who is not afraid either of money or men. When the United States went to war he volun-

teered. He is still, praise be, a business man.

When he came into Pershing's office he was probably told to sit down and have a cigar, and asked if he had seen any U-boats on the way over, that being considered a neat conversational opening in France nowadays, and before he could answer he was told that the American army needed coal and that it was up to him to get it.

HOW THE PURCHASING OFFICER ACHIEVES RESULTS

Well, he got the coal. But before he got it he negotiated with two European governments and the heads of some European labor. He had to find a way to have ships commandeered, not having any handy way to commandeer the ships himself. There was even talk of reopening some of the coal mines that France has temporarily abandoned on the central plateau because of a lack of labor, but that plan was given up for various reasons.

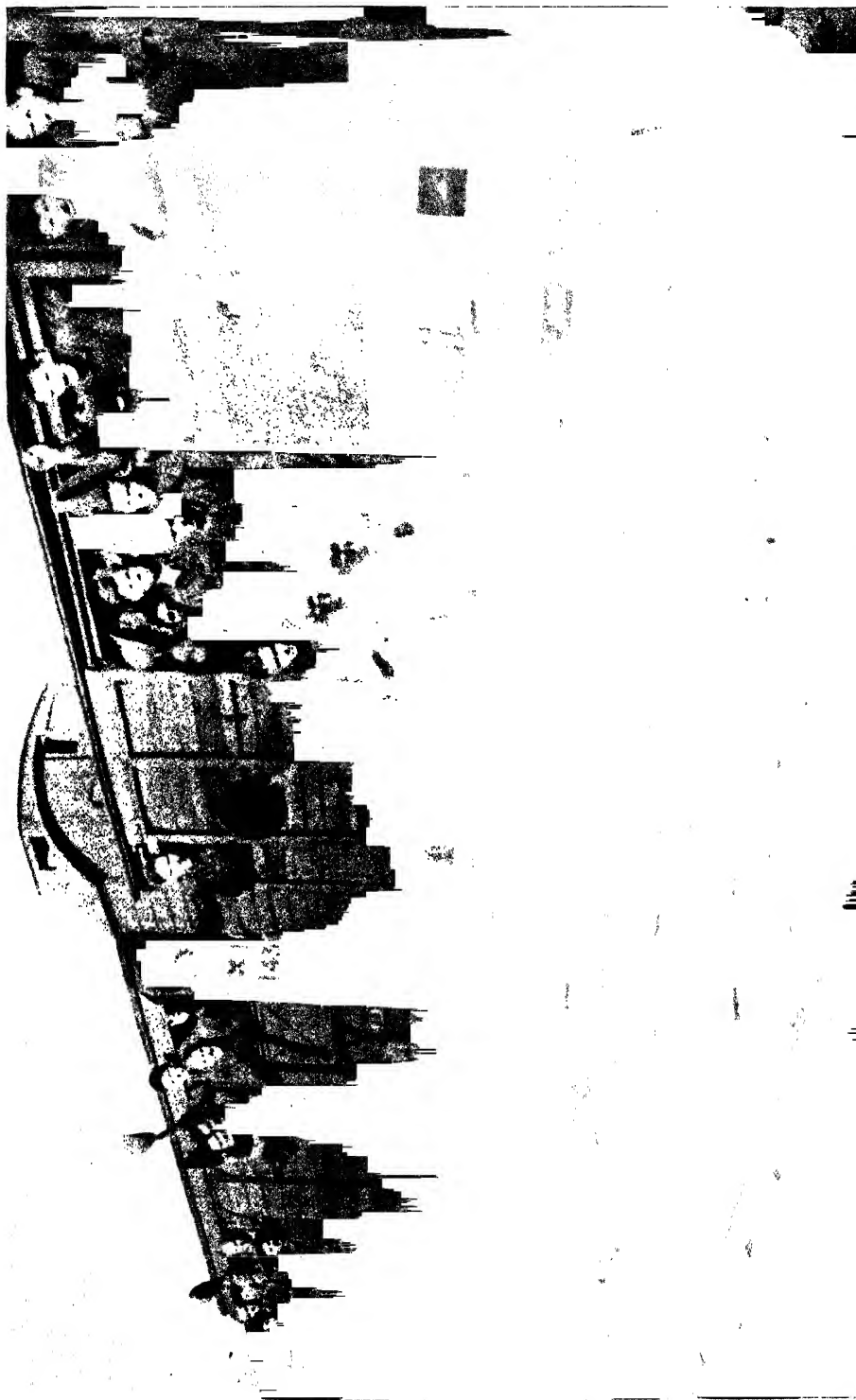
The whole secret of the job was that the American army *had* to have coal. At the moment there were 6,000 tons on hand; 10,000 tons were owing to the French Government; there was none in sight, and winter was coming on. That was a standard condition in all lines during the first days of the American activity in France.

The chief purchasing officer and his assistants got the things needed because they know how to hustle. I was in his office one day when a major, whose name and millions have been a Sunday feature in New York for twenty years, came in. The outlines of the feature have not changed materially. They consist mostly of dollars.

"I'm out of a job," said the major.

"Go to French headquarters," said the chief purchasing officer, "and get some stuff out of storage."

Before the major was out of the room the stenographer was telegraphing headquarters that the appointment of Major Money as liaison officer at French headquarters was desired. The appointment came back by wire before the major got to French headquarters. That is the sort



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U. S. MARINES IN FRANCE OFF FOR TRAINING CAMP

"Railroad cars were found here and there. One would not think that so conspicuous a thing as a railroad car could be lost, but they have assuredly been found. The explanation is that France has had no men to spare for repairing cars. The derelicts had been east away in railroad backwaters. American scouts found them and American mechanics were set to work making them over."

of speed they are showing in the Purchasing Board. The chief purchasing officer likes to hustle—and anyhow it is forced on him.

"The French expect us to hustle American fashion," said he. "They would be disappointed if we did not. What else can we do?"

EVERYTHING NEEDED AT ONCE

Everything was needed at once. Cloth for uniforms was bought in England, along with shoes and hats and blankets. France furnished cannon and tents, and pots and pans, and food. The rooky army was billeted in peasants' cottages until material for huts could be found and the huts built.

Paris was drained dry of all sorts of office material. I doubt if there is a good desk or filing cabinet or revolving chair to be found there today. The American army reached France as bare as a fish and it had to be provided for. Naturally enough, prices blew out of the chimney in this forced draft of demand. Three times the peace value was a fair price.

"I must have tents and blankets and cots for 250 men by six o'clock," was the telephone message that came to one buyer at noon one day.

"There isn't a tent nor a blanket nor a cot in town," said the buyer.

Usually that would have ended the conversation. But the man at the other end of the telephone was in earnest.

"Then 250 men will sleep in the snow tonight and cover themselves with a ditch," said he. "Don't tell me you can't get that stuff. You've got to get it."

NO ATTEMPT TO SAVE DOLLARS INSTEAD OF LIVES

He got the stuff, of course. That was General Pershing's standing order in those days. He did not attempt to save dollars at the cost of lives and worry and days. If he had tried to save money that way, he would not have been fit for his job. Little by little, order came out of the original chaos. The things that were needed before the army could set up shop in France—before it could even open the shop door—were bought at the best prices possible. Then began the work of organ-

izing the business. The army began to plan ahead and cut out waste.

The Purchasing Board was created. It is composed of the purchasing officers of the various army departments, while the purchasing officers of the Y. M. C. A. and Red Cross have a sort of collateral relationship to the Board, for both organizations are often in the market for the things the army needs. At each meeting the purchasing officers pool their discoveries and their needs.

Scouts have ransacked France and England and neutral Europe for deposits of raw material. The list of needs is made up in each department for three months ahead.

"Seven departments want 40,000 fish-hooks each," it might read, it being understood that in verity no department wants fish-hooks. "There are 192,000 fish-hooks available at the following prices."

WORKING IN CONJUNCTION WITH THE FRENCH MILITARY MISSION

The need being imperative, the purchasing officers of the seven departments are given permission by the Board to buy the fish-hooks. But before the buying is done, the need and the prices are placed before the French Military Mission, which works in conjunction with the Purchasing Board. It is conceivable that the French army needs fish-hooks, or army shoes, or rubber blankets, or whatever the item may be. It has the first call on the material available, but its officers have shown themselves extraordinarily helpful and generous. They have always pruned their own wants to the final hair rather than pinch the Americans.

"I cannot say enough as to the spirit in which we have been met," said the chief purchasing officer. "The French have placed their entire organization at our disposal and have opened all their records. Far from asking them to do more, our constant feeling is that we are ungenerous in permitting them to do so much."

The French Mission also passes upon the prices the American officers are willing to pay. In some instances purchases have not been made because the price was exorbitant. Throughout all these deal-



AN AMERICAN RAILWAY STATION NESTLED IN THE HILLS OF FRANCE
Every car that is put on wheels in France means a saving of precious tonnage over the ocean. Eight hundred castaway Belgian locomotives have been
rescued from the junk yards by the American Purchasing Board and are now being rebuilt by Belgian workmen.

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ings the spirit of mutual helpfulness is evident. Sometimes the French Mission ~~has~~ been able to secure better prices than the American officers have found, and sometimes they have revealed stocks of material the Americans had been unable to find. When the consent of the French Mission is obtained the purchase is made.

In the first days of the American expedition in France purchases were made in a scattering fashion. Then it became obvious that if only a few tents were needed at the moment, the day would come when tents by the thousand would be necessary. Therefore the man who found tents for sale—or anything else—bought all he could find if the price was right. Nowadays system has come into its own. The list of requirements for the army is made up now for three months ahead, on the basis of requisitions furnished by the officers commanding the active units. That is known as the "uniform" equipment. It is apparent that a unit of 25,000 men will always need certain things. It is equally apparent that there is no close relation between 25,000 railroad ties and 25,000 men. Sometimes the "exceptional" equipment comes into play.

RAILROADS PLAYING A MAJOR RÔLE

"We must build railroads," the Purchasing Board was told by headquarters. "Get the material."

In the good old days railroads were not of the major importance in warfare that they are today. The Germans upset the old rules of transportation. Early in the war they began to string little quarry roads behind the western front. The French followed suit. When the British began their Somme offensive, in 1916, they had laid more than 3,000 miles of road, standard and narrow gauge, behind their comparatively narrow front. The American army's railroad needs will also be great. The existing roads from the water bases must be reconstructed to take care of the heavy traffic anticipated. Preparations must be made for the feeder lines behind the front, when that front becomes an actuality.

The American army cannot take cars and engines and cross-ties from its allies.

"Scout for them" was the order of the purchasing officer.

It is at this point that the American business men who have become officers in the American army began to show themselves particularly useful. The chief purchasing officer once said a pertinent thing: "Put a captain of industry," said he, "in a uniform of a captain of the army and you have a combination that gets results." These men are familiar with all phases of American and European business. They know where things may be found and how to find them and how to buy them. They are used to doing big things in a big way.

PREDICAMENTS OF SPAIN AND SWITZERLAND

So the scouting for railroad material was done by experts. Little jags of steel rails were found that had been forgotten. There were disused patches of railroads and sidings that furnished a handful each. Wanderers in the back blocks of Switzerland and Spain and Portugal found railroad ties. Portugal was ready enough to sell—at a price—for she is an ally, but at this point the Purchasing Board entered the realms of diplomacy. Switzerland and Spain were likewise willing to sell—but for a consideration over and above the purchase price.

These countries had an "internal" situation to consider. Señor García Priet, Prime Minister of Spain, in a recently quoted interview, declared that if the United States did not furnish cotton to the Barcelona mills hundreds of thousands of persons would be thrown out of work. A crisis cloud is forever banking up on the edge of the Spanish horizon. There has not been the least concealment of a revolutionary party in Spain, or that an enforced stoppage of work would naturally strengthen the forces of discontent.

In similar fashion Switzerland is set between a very ravenous devil and a particularly blue sea.

On the one side she must buy coal and iron ore from Germany, or her people would freeze in the winter and her industries would wither and blow away. Before Germany will deliver these and

other things that the Swiss must have, she extorts her own terms. Germany recently compelled certain Swiss banks, unofficially, to take a part of a war loan, for example, and the Swiss food reserves are continually tapped by her.

It would be impracticable for Switzerland to turn over to Germany the foods she receives from the Allies, but Swiss cheese is about the scarcest thing in Switzerland. The Allies appreciate the position in which Switzerland is placed and have tried to be as generous as possible. Most of her food-stuffs come from France and Great Britain today.

I am not in a position to go more deeply into the course of the diplomatic negotiations which the Purchasing Board entered upon. But the American railroads in France will be set in part upon 25,000 ties bought in Switzerland, while 20,000 sleek Spanish mules have braved their way across the mountains to enter Uncle Sam's service. Contracts have been let to Swiss manufacturers to make certain things for the Americans, too, and there a further dalliance with diplomacy was needed.

The raw material must be furnished the Swiss, for they did not have it. That was agreed to. Then Germany became aware of the arrangement. Germany furnishes a greater part of the coal to Switzerland. The mere suggestion that an ounce of her coal should be used to fire boilers to make steam to run lathes to shape shells—or other things—for the wholly to be looked-down-upon Americans sent the Wilhelmstrasse into a tremble. So the Purchasing Board had to arrange that coal should be furnished these manufacturers.

RAILROAD CARS LOST AND FOUND

Railroad cars were found here and there. One would not think that so conspicuous an article as a railroad car could be lost, but they have assuredly been found. The explanation is that France has had no men to spare for repairing cars, except when the repairs were vitally necessary. Little by little, derelicts have been cast away in railroad backwaters. They still had the outward aspect of cars,

and there were wheels under them, but that was about all that could be said. The American scouts, prying into all stray corners, found them, and workmen were found—some of them belong to American engineer regiments—and the cars were made over again. Every car that could be put on wheels in France meant a saving of precious tonnage over the ocean. Then a discovery that might be called sensational was reported to the Board.

"Did you know," a scout asked, "that there are 800 unused Belgian locomotives in France?"

ALL THAT WAS LEFT OF BELGIUM

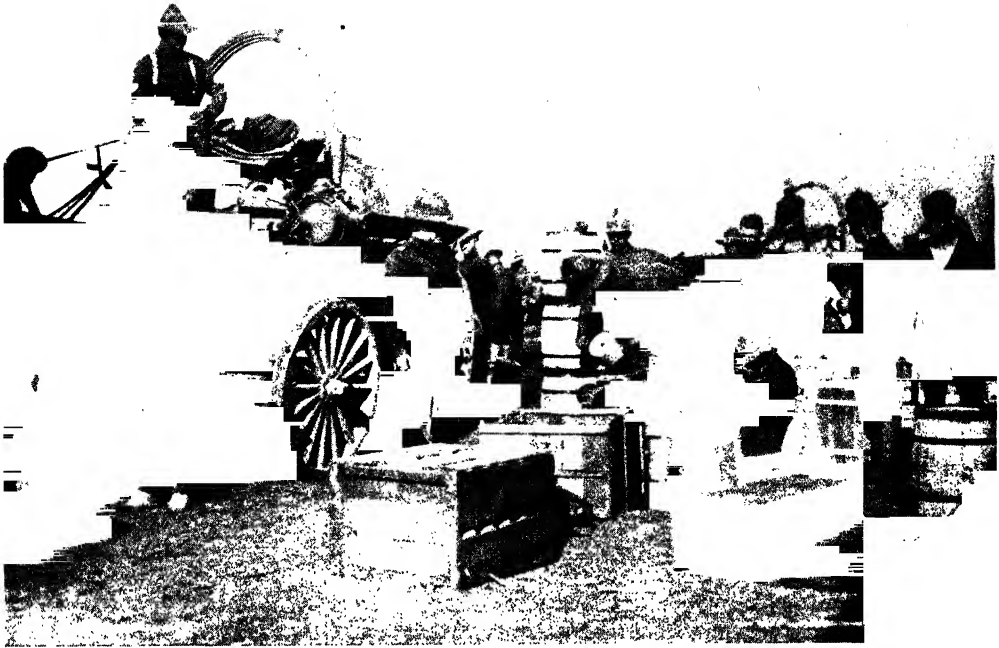
The tale of the locomotives is a tag to the tragic story of Belgium. When the Germans invaded that little State, the dazed people saved what they could. Most of the rolling stock was lost, but the Belgians managed to run 1,900 engines over the border into the safe land of France. The needs of France and England were paramount in those days, and 1,100 engines were turned over to the armies for service. Naturally enough, only the best were taken. The 800 that were left were rusted and shabby, but they were precious in the eyes of their Belgian owners.

"They are all we have left," they said, "all that is left to us of Belgium."

Once more the purchasing officer became a diplomat. The Belgians had been ruled by sentiment. For the moment they were not thinking of the practical side of the question. The 800 old engines were a symbol in their eyes. They were useless as they were. Weeds were growing through their fire-boxes. Many had been sacked of spare parts that better engines might be rebuilt. They were incredibly and pathetically decrepit, but they were all that was left of Belgium.

"We're trying to help you, you know," said the purchasing officer. "Let's all pull together."

So he got the engines. Before they could be made useful they must be rebuilt. Belgian workmen were available for the rebuilding, and there are no better workmen in Europe; but they were empty-handed. The Purchasing Board's scouts patiently ransacked France and



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ISSUING SUPPLIES TO TROOPS IN FRANCE

"The American army is 3,000 water miles away from its home base, in a country that is increasingly feeling the strain of more than three years of war"

England, hole and corner, until enough machine tools were found for the operation. France was practically cleaned of her spare machine tools, but somewhere in France the rebuilding process will be finished by the time the Belgian locomotives are finished.

In England the Board's scouts work with the government. Manufacturing is the great business of the country. The British are familiar with it. Early in the war they took steps to earmark all stocks of raw material, so that when the Board wants a given thing it has but to say so.

The permanent under-secretary, in charge of three-inch screws, has but to turn to his index to state whether he can furnish the screws wanted and when and how many and where. It is different in France. The French are individual to their heels. Instead of one large manufactory, they prefer many small manufactories for a given output. Each factory stands on its own bottom. Each has its own supplies.

Further, France has been so busy fighting since the beginning of the war that she has not had time to take governmental charge of her deposits of raw material. Her administrative energies have been devoted to getting every valid man in line and keeping him there. Coincidentally, her manufacturers have been able to keep that line nourished with every form of supply an army needs, but it has been largely by private enterprise.

The individual manufacturer has found his materials where he could and the women have done the work. It is the women who will do the work when the American Army's Purchasing Board goes into the manufacturing business this year.

ARMY'S BUSINESS OPERATIONS FIGURED
IN TONNAGE

Every business operation of the army is figured in tonnage terms nowadays. The great question is how the tons can be saved. Almost as soon as the Amer-

icans reached France the camp buckets and kettles and pots and pans were identified by some observer as space-wasters in shipholds. Pots that will "stack" were bearable, but too many kettles will not stack. So the tin and galvanized iron and what-not needed were brought over in the raw and contracts given to any small workshop factories in France to manufacture these minor and clangorous items. The idea proved sound. France is short of labor, but there are still women and youngsters and exempts to be had. The Purchasing Board began to ask itself:

"Why not make more things?"

Canned goods are a staple of the American soldier's dietary. He likes to buy a can of peaches and a can of condensed cream and pour the milk onto the peaches and fragrantly eat the combination. All his life he has been used to canned goods. Every company canteen has handled "air-tights." But they take up a frightful lot of space on shipboard, and besides there is plenty of fruit to be had in France. To bring American canned goods to a country where each peasant makes a pet of a pear tree is like carrying coals to Newcastle.

FRENCH WOMEN TO CAN FOR AMERICAN SOLDIERS

So the tin is to be brought over in sheets and made into cans in French shops. Next summer the farm women of France will be supplied with tin cans and sugar and contracts, and will furnish what part of the canned goods for the American army's consumption that may be possible. The French woman is particularly expert at jam-making, and next winter the American boys will have jam on their white bread. There is an annex to this story, too. For some reason France has never taken kindly to canning fruit, although, oddly enough, quantities of American canned fruits have been sold in France. It is believed this practical demonstration on a large scale may mean the creation of a new industry.

If I tell the story of another of the Board's infinite number of manufacturing activities, it is only because it even better illustrates the care that is being taken to cut down tonnage. Chocolate is

a standard item with every soldier. When possible, chocolate candy is put on sale in the canteens, and when that is not practicable chocolate bars are offered. ^{tin} Cocoa beans, however, do not originate in the United States, and there is a demonstrable waste of time and space in shipping them first to America and then combining their essential oils with sugar and sending the resultant goody to France: so that now the cocoa beans are shipped straight to France from the place of origin and the sugar sent over from the United States. French manufacturers do the rest. Likewise the sweet, crisp biscuits the boys like are no longer being imported. The sugar and flour are brought in and turned over to French bakers.

American splints are being made in France on the same plan. In pursuance of the army policy of getting ready for the worst, an enormous supply of splints was considered necessary. Splints are awkward things to pack. They come in queer, unusual forms, and must be carefully boxed, because they are very fragile. After the standard forms had been decided on by the Army Splint Board, which is in charge of this item, the order was turned over to the Red Cross, which had promised to supply them. Acting in perfect harmony with the Purchasing Board, 100 tons of the needed metal were brought to France and the splints were made. They would have taken up not less than 1,000 tons of shipboard space if shipped in the completed form.

MEN WHOSE HEARTS ARE IN THEIR WORK

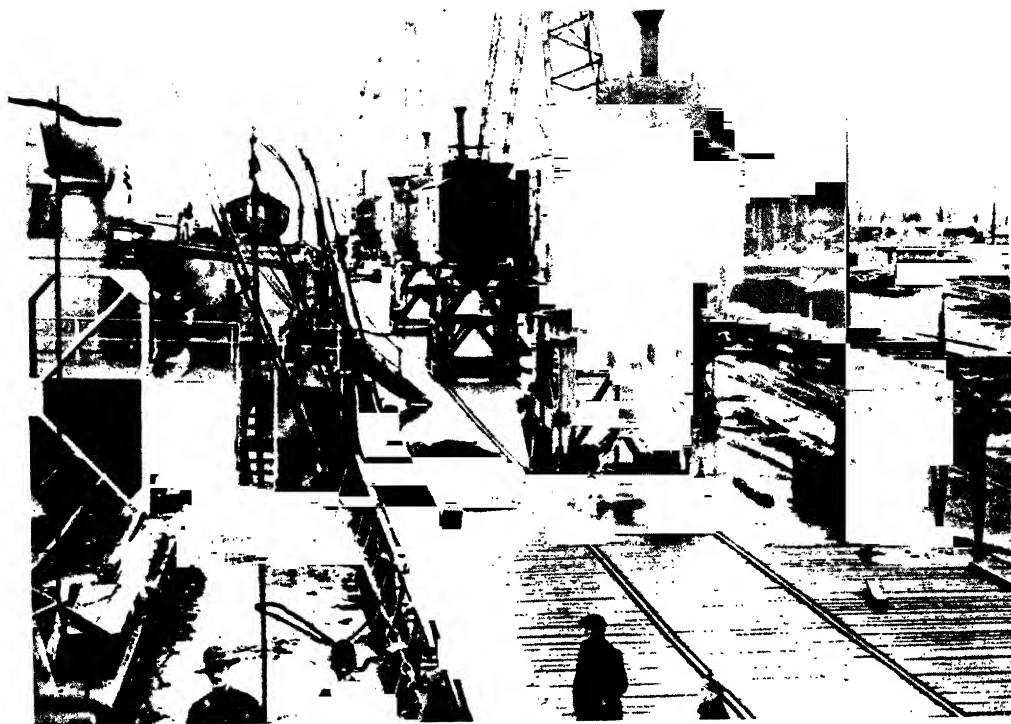
When an army requisition has passed through the Purchasing Board's hands, the terms of the equation are about as follows:

"We need so many tons;

"We can buy so many tons in France:

"We can import so many tons."

Then general headquarters passes on the order. General headquarters is the final arbiter on all things. Somewhere in that mysterious region is a sheet showing the number of ships which are to sail from the United States and the tonnage space available. There is always a need for a great deal more space than can pos-



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STEAM CRANES USED IN UNLOADING AMERICAN SUPPLY SHIPS AT A FRENCH PORT

The American army's Purchasing Board in France makes purchases, negotiates with European labor, adjusts American machines and ways of doing things to continental men and women—all to relieve allied shipping and French docks of as much of the transportation burdens as possible.

sibly be secured, so that general headquarters goes over the list of needs with a pruning knife. It is interesting—and tragic—to listen to the men whose departments have been pruned. They act as if their entire future lives had been spoiled. They are the sort of men General Pershing has on this sort of a job. Their hearts are in their work.

Once the wants are compressed to the dimensions of the can-gets, the orders are sent to the United States for the material that is to be shipped. On the French side the General Purchasing Board, through its members, is hurrying about, getting what can be got. The Board, as a Board, makes no purchases. It is only a directing mechanism—a sort of a congress of prices and supplies. The competition between the different departments of the United States Army has been disposed of in the session of the

Board in which each man has placed his cards upon the table; but there is still the competition with the French and British governments to be guarded against.

This guard is absolute, where goods are to be bought in Great Britain. There the British Government does the buying and the United States Army settles for the goods bought; otherwise no goods could get out of England. Not even a Christmas card could be sent to France last winter without a special license for the sending. In the neutral countries of Europe a Franco-American Purchasing Board handles all such purchases, except in cases where the Inter-Allied Purchasing Board assumes the right.

It is too early as yet to say what will be the full scope of the Board's manufacturing activities in France. However, apart from the question of raw material, it must be limited by the labor and facili-

ties available. The greater part of the present manufacturing potentialities of France are already absorbed by the needs of the government and the civilian population. It would be a comparatively easy matter to enlarge the factories now in being, or build more, and equip them with American machinery, but the labor is not at hand.

"WHY NOT IMPORT AMERICAN LABOR?"

"Why not import Americans?" I asked.

That has been carefully considered, it appears, but the idea is not likely to be put in effect on a large scale. Every imported American must be fed and clothed and provided for in France. Use will be made of all the labor available on the ground before the Americans will be brought over. The Purchasing Board once had under consideration bringing in labor from Greece and Spain, but diplomatic considerations intervened. This is a story that may never be told.

Offhand one would think that many of the things now being bought would outlast the war. But things do not last in war. Clothing wears out and tents go to pieces and mules die and cars get shell-shock. The chief purchasing officer thought that the 1,804,000 tons which were purchased in Europe in six months (the total must run to more than 2,000,000 by the time this article appears) would prove to be only a beginning. As the army increases in France, so will the

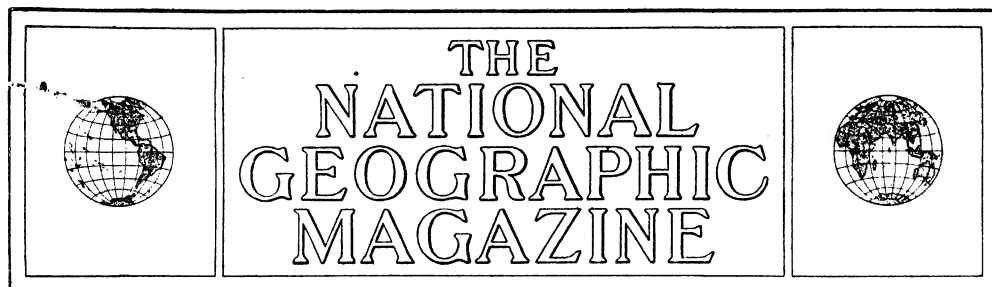
purchases. The time will come, of course, when the buying will be largely confined to the raw materials available, but that buying will account for practically every pound the armies of the other allies do not take.

To the outsider the impressive feature of the organization, apart from the dent that is being put in the U-boat totals by this organized and systematic development of assets at hand, is the perfect teamwork that prevails. Some members of the purchasing department are Regular Army officers; others are business men who have never seen an army officer before except in the Memorial Day parade. Their methods and training and outlook are entirely different; yet they have dovetailed together perfectly.

The complexity of their tasks may be surmised from the fact that the first two requisitions passed on totaled up more than 3,000 articles, but competition between departments and governments on prices had been practically eliminated. These men have been suddenly called upon to handle a business ten times as large as that of United States Steel, and they have handled it. Some have made good and some have failed; but most have made good.

The chief purchasing officer remarked, incidentally, that in his six months at the job he had not found one case of dishonesty on the part of an army officer; but he did not think that remarkable.





THE HEALTH AND MORALE OF AMERICA'S CITIZEN ARMY*

Personal Observations of Conditions in Our Soldier Cities
by a Former Commander-in-Chief of the
United States Army and Navy

BY WILLIAM HOWARD TAFT

EARLY last winter disquieting reports gained circulation concerning the conditions in our National Army cantonments and with regard to the morale of the drafted men.

According to these reports, a large percentage of the men would be glad to leave their camps and return to their homes. It was said that they did not understand the issues of the war; that they did not think it necessary to send an army to France.

Dr. John R. Mott, the General Secretary of the Young Men's Christian Association of the United States, and one of the great men of this generation, sent word to me of these reports, received from agents of the Association detailed for work among the drafted men.

While there was neither sedition nor mutiny among the men, Dr. Mott deemed it of the highest importance that some one should go to them to explain why we were in the war, why an army should be sent to France, and why it was necessary to fight this war through as a battle for Christian civilization.

He said there were sixteen cantonments, one of which, Camp Lewis, at American Lake, on the Pacific coast, I could not reach, but the other fifteen he asked me to visit and to speak at length on the subject, twice a day, to the soldiers in each camp. Subsequently, Camp Dix, at Wrightstown, N. J., was excluded from my list because of a quarantine, and there were substituted Camp Sheridan, a National Guard camp, at Montgomery, Ala., presumably because it was the Ohio National Guard, and the naval cantonment at the Great Lakes, north of Chicago, where 25,000 men were in the course of preparation for the navy.

I doubted my power to attract the attention of the drafted men to the issues and to convince them, but I felt it my duty to go, if men like Dr. Mott and Mr. William Sloane, the president of the army branch of the Young Men's Christian Association, thought it would be helpful, as they said they did.

Accordingly, on New Year's Day I visited Camp Grant, at Rockford, Ill., and spoke four times there to audiences of 3,500 men each. Thence I went to Camp Dodge, near Des Moines, Iowa, and spoke there to similar audiences five times.

* Lecture delivered before the National Geographic Society, in Washington, D. C., March 15, 1918.



THE BOND BETWEEN THE BOY AND HIS HOME IS EVER PRESENT: INTERIOR OF A Y. M. C. A. BUILDING AT FORT SNELLING, MINNESOTA

THE EXTENT OF THE TOUR

On January 24 I began a tour of the camps, including Camp Devens, Ayer, Mass.; Camp Lee, Petersburg, Va.; Camp Meade, near Baltimore; Camp Jackson, Columbia, S. C.; Camp Gordon, Atlanta, Ga.; Camp Sheridan, Montgomery, Ala.; Camp Travis, San Antonio, Tex.; Camp Pike, Little Rock, Ark.; Camp Funston, near Junction City, Kans.; Camp Taylor, Louisville, Ky.; Camp Sherman, Chillicothe, Ohio, and Camp Custer, Battle Creek, Mich.

I finished the tour at the Great Lakes Naval Training Station, near Chicago, on February 20, having made in all fifty speeches, at least an hour in length and sometimes longer.

In some instances the attendance was voluntary; in others there was a regular detail, but in all cases the men at one meeting were excluded from attendance at another.

This may seem to many who read it that it was cruel and unusual punishment and added a burden to the draft. How-

ever, on the whole, the boys stood it fairly well and listened with apparent interest and responsive attention.

In the course of my address I tried, by illustrations and stories in a lighter vein, to escape the somnolence that an argument on legal topics often produces, and I hope I succeeded in giving the boys more than one "seventh inning" in which to relax their mental muscles and take a rest.

What I attempted to do in these addresses was to argue out the case of the United States against Germany; to show that she forced us into the war by a violation of our national rights in attempting to fence off a part of the high seas against our commerce, and in murdering 200 of our citizens by sinking them on commercial ships within the zone without warning, and threatening to continue this course in the future. It involved a reference to the principles of international law and to a demonstration, by precedent, of the rule which required a belligerent, in destroying a commercial



RELAXATION OF MIND IS AS NECESSARY AS GOOD FOOD

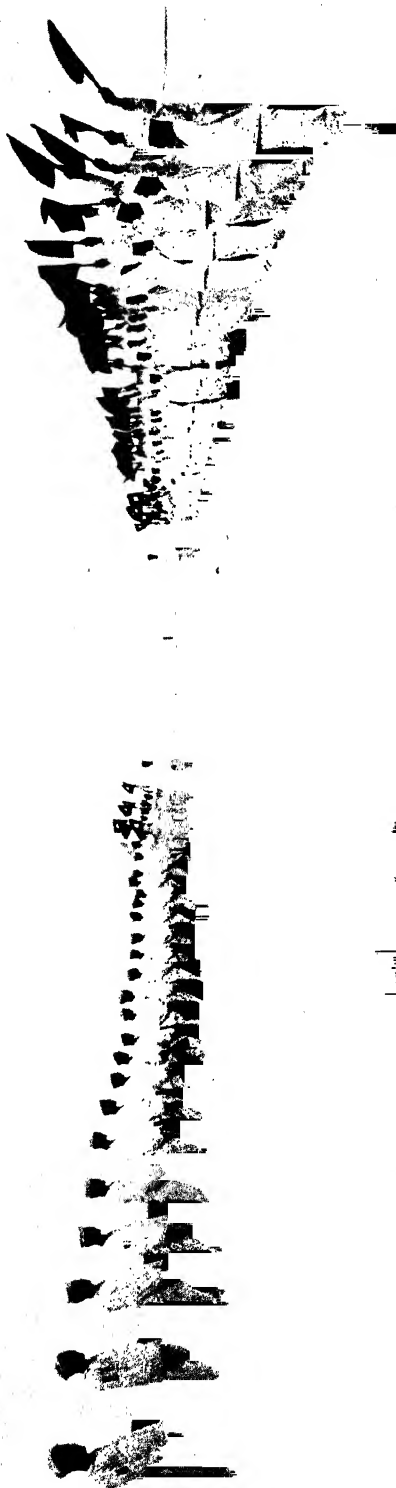
ship of its enemy or of a neutral on the high seas, to secure the safety of the ship's company of the destroyed vessel. I pointed out that Germany left no course to a government of honor, which professed to defend the rights of its citizens to life against murderous invasion, to do other than to declare war.

THE CASE OF THE WORLD AGAINST GERMANY

The second part of the argument was devoted to presenting the case of the world against Germany, and involved a tracing of the history of the German people from the time when they were 28 divided States, in the nineteenth century, to recent periods, when, through the education of Bismarck and the Prussian military régime, the people, following the law of William and the Potsdam gang, had become obsessed with the conviction that they were supermen in war and in peace, and were charged with what they called a divine destiny, and which was nothing but a lust for world power, in spreading German kultur over the world; and I at-

tempted to enforce as strongly as possible the view that, having abolished in her rules of national living international morality, Germany, under her present leadership, was a perpetual threat to the integrity of every nation, and especially of democracies, and made a permanent peace impossible; that we must bring Germany to her knees by defeating her, which would necessarily turn the people against their leaders and their former false ideals and make them an amenable member of the family of nations; that if we made an inconclusive peace with her, only two alternatives were open to us: One was that of submission to the suzerainty of Germany; the other was the maintenance of our nation as an armed camp to resist German aggression in the future, with a certain prospect of another war with Germany as soon as opportunity seemed to her at hand.

I tried to make my statement of international law and the course of the argument as simple as I could, and if I can trust the expressed judgment of others and separate it from the promptings of



Photograph by U. S. Navy Department

SEMAPHORE AND WIG-WAG SIGNALING: NAVAL TRAINING STATION, NEWPORT, RHODE ISLAND

When a young American undertakes the patriotic job of becoming a fighting sailor, one of the first things he has to master at a naval training station is his "A, B, C's," for he must learn to read, not the printed or written page a few inches from his eyes, but the wig-wag writing of a fellow-seaman hundreds or even thousands of feet away. The radio and the wireless telephone have accomplished marvels in facilitating communication between the units of a fleet, but the semaphore and the wig-wag flag still have their place in the service.

kindly courtesy, I think it helped the boys by fixing in their minds at least the logical and chronological sequence of events and in bringing home to them the vital concern we have in the issue of this war.

THE NECESSITY FOR PROPAGANDA

This war differs from other wars that we have been in, in the necessity for propaganda to explain its issues and its profound importance to the people of the United States. When it came on, in August, 1914, the whole people rejoiced that we were so remote from the seat of war, separated by the Atlantic Ocean, and so barred from it by our national traditions that we would escape the vortex of destruction and suffering that was opening to the European nations.

For three years we occupied as near a judicial position as the circumstances permitted and discussed the issues between the nations with an impartial state of mind. Then we were forced into war through a violation of our rights at sea. It was difficult to arouse our people to the importance of those rights in a zone of the high seas so far away as Great Britain and Ireland.

The statements of the President properly set forth as our object in the war certain ideals of a world character and importance. Our material interest in maintaining those ideals, however, it was difficult for the people to appreciate.

The issue was not as it was in our Revolutionary War, at our doors, and had not been the subject of political discussion for half a century, as the slavery and secession issue had been before our Civil War. Prosperity and money-making, high wages and high profits, absorbed the interest of our people, and it was difficult to challenge their attention to the inevitable consequence of German victory. Hence the con-

sciousness of the fact that we are really in war has but slowly been stealing over our people as a psychological fact.

The officers in command of the cantonments which I visited were general officers of the Regular Army. I had met them and known them all in the Philippines and in the War Office. They now wore stars instead of the captains' bars or majors' leaves which they wore in Philippine days. They talked freely with me about conditions, and with the information which they gave me and that which I derived from the numerous Y. M. C. A. secretaries, I feel that I obtained fairly reliable information as to conditions prevailing in the camps. I soon became satisfied that the attitude of the men toward the war and their service in it, as reported to Dr. Mott, which had induced him to ask me to make the trip, had radically changed. It must have been that his informants had sent word to him at a time before the men had become adjusted to their camp life.

THE FINEST MATERIAL IN THE WORLD FOR THE MAKING OF AN ARMY

The men when drafted were from 21 to 31; many of them had become more or less settled in life. Many of them were in receipt of compensation substantially greater than that which they would receive as private soldiers. The inconvenience and lack of comforts inseparable from a camp life they had not grown used to, and they naturally were at first in a state of protest and question over the change. When I went through the camps, however, they had grown accustomed to camp life. In the drill and manual training and instruction they had begun to understand the government's purpose and had become interested in fitting themselves for their new duties.

The commanders of the camps assured me that the drafted men were the finest material for the making of an army they had ever seen in any country. On the average they were better men physically, mentally, and morally than the average of the National Guard or of the Regular Army. They were a clean slate to write upon. They did not have to unlearn anything and they learned quickly. They manifested the known adaptability of the

American. The difference between their appearance when they first reached camp and after three and four months' training was wonderful. Their appearance in review, as they went by with their lithe figures, their martial bearing, their military step, their bright, healthful color, gave one a thrill of patriotic pride. Their response, as they sat in a great audience, to patriotic sentiment showed that their hearts were in the right place. They are an object-lesson in universal military training and a powerful argument for its establishment.

EVERY SOLDIER MUST BE AN EXPERT

The German has so changed the art of war that every private soldier must learn his trade as an expert. Through discipline and practice he must acquire a knowledge of the particular duty assigned to him, so as to make his performance of his proper function second nature. This is being impressed upon them by their own officers and by the English and French officers, of whom there are eight to ten in every camp.

I ventured to point out in every speech I made the importance of discipline and practice and included a word on the necessity for the salute. The salute is said to be descended from the salute which one knight made to another in the days of chivalry by lifting his visor. It is only a recognition by one member of the craft of his association with another of the same craft. It does not involve inferiority or servility. The private salutes the officer. The officer is one of higher rank. The salute must be returned. The duty of initiating the ceremony is a recognition of subordination, a relation that must exist in an army if an army is to be an effective military machine and not a mob.

The progress in military science has been in the development of the machine-like operation of the different parts of an army. The private soldiers are cogs working into other parts of the machine and moving under control of their immediate and higher commanders, as cogs act with the wheels and other mechanism with which they coöperate. The salute is only a recognition of this relation of association. It was interesting to watch how the new men disregarded it and how



INTENSIVE TRAINING

Photograph by Earle Harrison

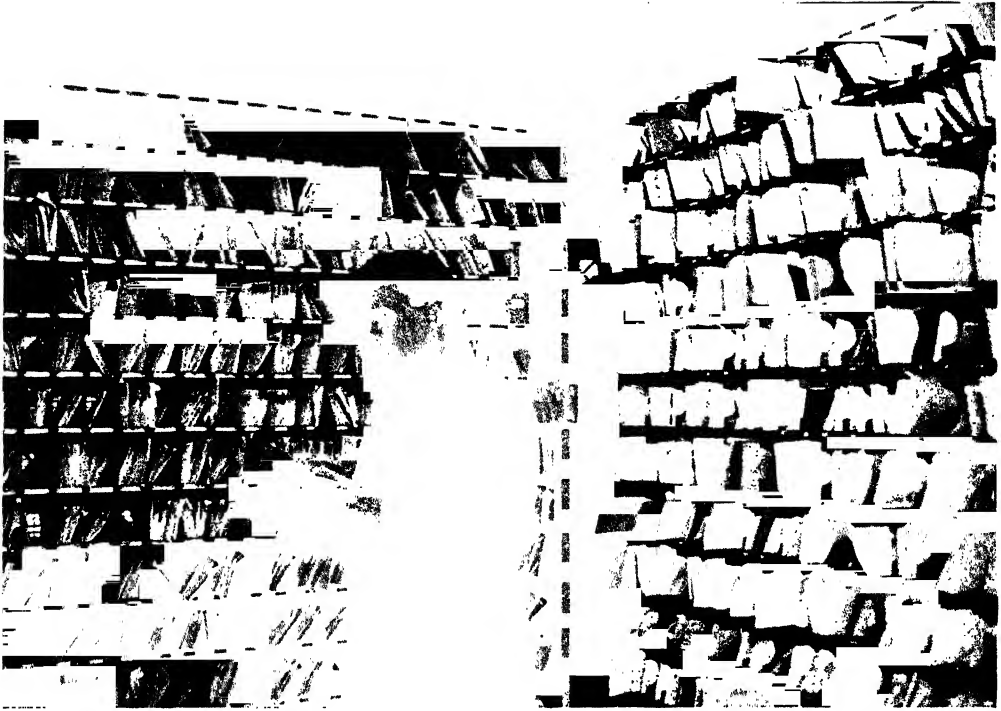
A three-inch gun in action under a camouflage of straw and sage-grass. First Virginia Field Artillery in training at Chickamauga.



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SETTING-UP EXERCISES: 10,000 MEN IN TRAINING AT CAMP HANCOCK

"The commanders of the camps assured me that the drafted men were the finest material for the making of an army they had ever seen in any country"



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A CORNER IN CORRESPONDENCE AT A SOLDIER CITY POST-OFFICE

Letters from home are vital factors in maintaining and elevating the morale of the men in camp. The student soldier works better and learns to fight harder when encouraged and heartened by words of cheer from those whose service to democracy lies in civilian fields of activity.

the men with more training gave great attention to giving it properly.

EXPLAINING THE NECESSITY OF THE
SALUTE

I sought to win the sympathy and confidence of the boys by reference to the fact that my own son is an enlisted man in the field artillery. I think it enforced my argument in favor of the necessity of the salute, by pointing out that I would not be likely to approve it if it was any evidence of his inferiority or servility.

The freedom and independence that an American youth enjoys make it necessary to have the reason for such a ceremony explained to him. His self-confidence and his self-conceit make it irksome to him, at first, thus to register his subordinate position or to obey implicitly, as he must, if he would be a good soldier. His love of initiative and his intuitive lack of discipline make it hard for him to con-

form to the rigid requirements of military life, but after he has acquired the habit, then his initiative, his willingness to assume responsibility, his intelligence, and his independence add greatly to his effectiveness as a soldier.

It is these traits, under proper discipline, that are now making our brigade and division commanders so proud of their drafted men.

Next in importance to the control and influence exercised by their commanders is the environment and opportunities for occupying their leisure which the Young Men's Christian Association affords to the men of these cantonments. In a division there are frequently as many as 50 Y. M. C. A. secretaries. They are dressed in a neat khaki uniform, with a red triangle on their arms, and they live a life of soldierly routine. There is the principal headquarters of the Association in each camp and one great auditorium,



© American Press Association

A FIELD BAKERY AT A NATIONAL GUARD MOBILIZATION CAMP

"Too many cooks" may spoil the broth in civil life, but it takes 32 bakers to produce the bread supply for one encampment. The capacity of a cantonment bakery is nearly 40,000 two-pound loaves every 24 hours of operation. At the National Guard camps, of course, the requirements are smaller.

which will hold 3,500 men. The seats in it are movable, so that the hall may be used as a gymnasium and for basket ball. At the headquarters and in the 12 or more Y. M. C. A. branch houses, one to a brigade or less, are local opportunities for reading and writing and all sorts of entertainment.

The Knights of Columbus have one auditorium nearly as large as the large auditorium of the Young Men's Christian Association, and a very comfortable place it is. There they hold the principal religious masses of the week.

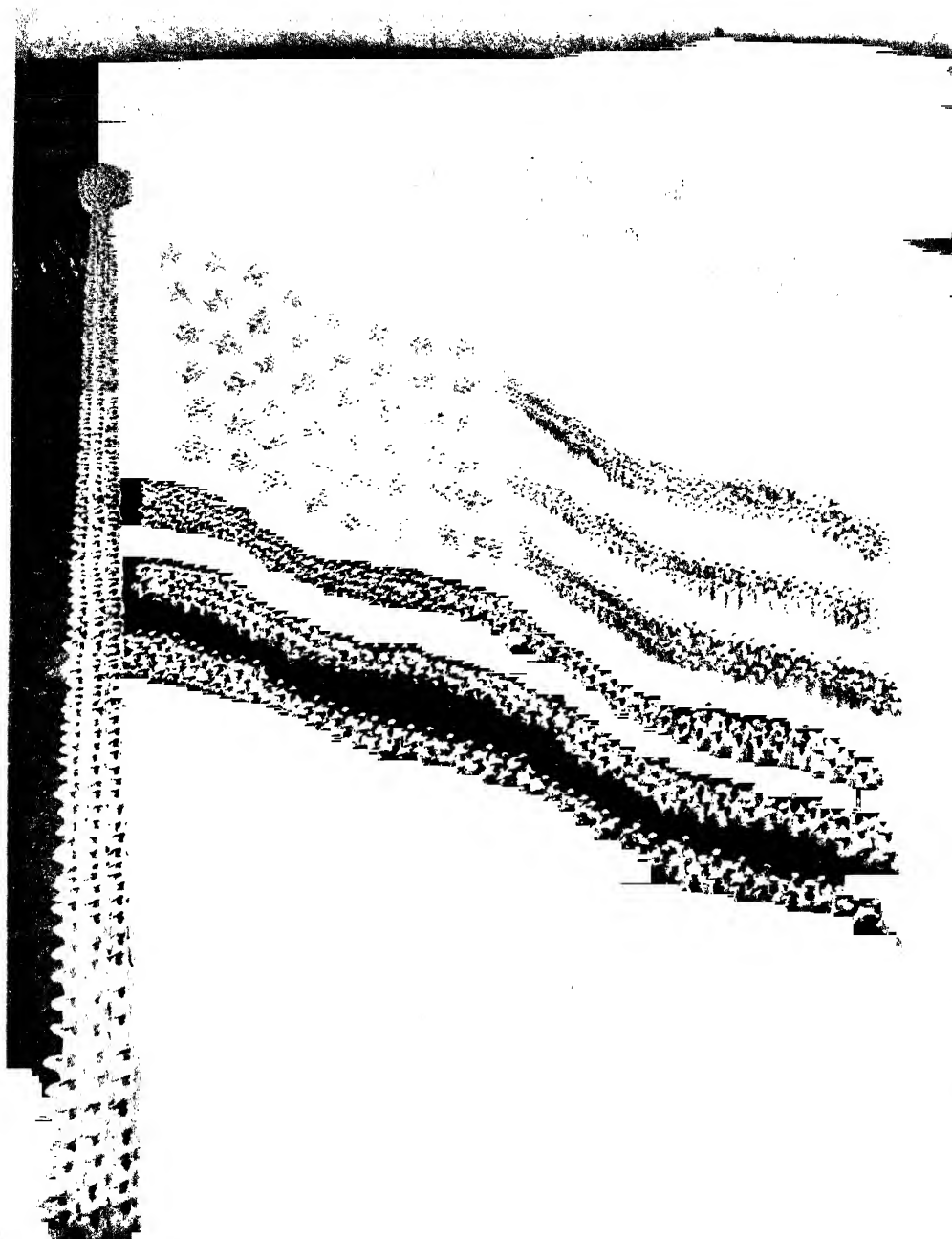
Where there are agents of the Young Men's Hebrew Association, they are received by the Young Men's Christian Association and furnished an opportunity to help their Hebrew brethren.

Nothing is more gratifying than the complete coöperation among these three institutions of differing denominational origin. It often happens that as the camp

is very large, the Catholic priests ask to use a local Y. M. C. A. branch for a mass for the regiment near which the branch auditorium stands, and the request is always granted. In every way there is a brotherhood spirit between the organizations which prevents duplication and makes for effectiveness.

NO SOLDIERS' CAMPS EVER BEFORE SO FREE FROM DRUNKENNESS

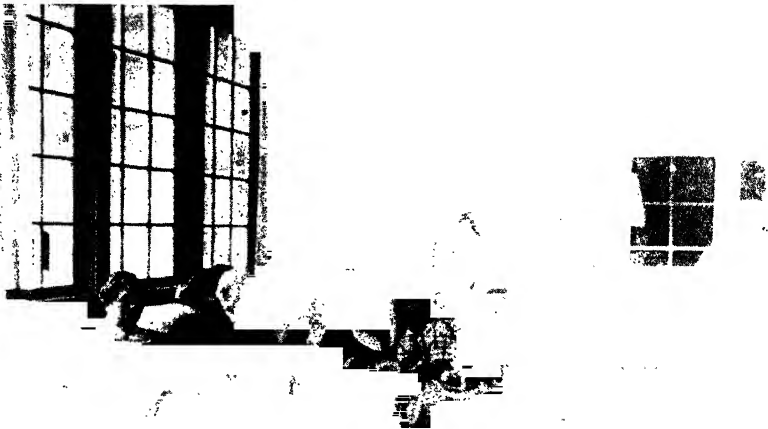
In some of the camps there is a large so-called Liberty theater, erected by the Fosdick Outside Activities Association. The theaters are well constructed and make good auditoriums, and here vaudeville reigns. It is not too much to say, however, that the agency upon which the commanding generals lean in dealing with the social side of their men and in filling their leisure hours with useful occupation and entertainment is the Young Men's Christian Association. Its organization



© Great Lakes Recruit

**THE GREATEST FLAG IN THE WORLD: 10,000 BLUEJACKETS FORMING A LIVING
EMBLEM OF THE AMERICAN UNION**

This animated Stars and Stripes, formed at the Great Lakes Naval Training Station, covered an area of seven acres. The ball was composed of 250 men; the pole (not including the ball) was 550 feet long, four feet in width at the bottom, six feet at the top, and required 700 men; 1,600 men were required for the white stripes; 1,900 for the red, 1,800 for the stars, and 3,400 for the blue field. In order that the proportions should appear correct, many niceties of perspective had to be solved. For example, the topmost star was composed of 65 men, in order that it might appear the same size as the star nearest the camera's eye, with only 12 men.



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A HOSTESS HOUSE FOR BOYS IN TRAINING AT ONE OF OUR SOLDIER CITIES

Among the most effective social undertakings of the Young Women's Christian Association has been an arrangement whereby homes in the cities adjacent to the cantonments are thrown open to the men in uniform. Here they may enjoy that social intercourse of which they were suddenly deprived when they responded to the nation's call to arms.



Photograph from Burnell Poole

THE CHAMPION RACING CREW OF THE ATLANTIC FLEET

At the Great Lakes Naval Training Station, near Chicago, the navy is training 25,000 youths, most of them between the ages of 18 and 22. During the past winter they received instruction in two great drill halls, one of which is capable of accommodating 7,000 jackies.



AN AMERICAN OBSERVER AT HIS LOOKOUT POST

Instruction for the Intelligence Corps is a highly specialized course, and a school where this is taught is located at one of our cantonments. The observer shown in the illustration is a student at this school and is watching from his place of concealment the effect of his battery's artillery fire upon the enemy.



A KITCHEN BATTERY

© Committee on Public Information

Plenty of good food at the right time is one of the chief problems with which an army head must contend, and by means of these efficient ranges our soldiers can be fed along the line of march.

is so large and so complete and so effective that it enters into every soldier's life. Of course, on the other side, when we have casualties and many wounded, the functions of the Red Cross will assume the greater importance; but in the training camps it is otherwise.

It is most gratifying to be able to testify, from all the information I could get, that no camps have ever been so free from drunkenness as those in this present national effort. In most cases the nearest towns are dry, and the great cities where drink may be had are so far from the camps as not to prove a temptation. The same thing is true of the morality of the men, so far as I was able to learn from the commanding officers. There were some of the camps where the neighboring towns were wet, but the danger of selling liquor to soldiers as a violation of the commercial law has proved a very excellent preventive. I must think from what I saw that the activities of the Y. M. C. A. and these other institutions have played a large part in maintaining decent and proper living among the soldiers.

The sites of the camps seem to have been very well selected, so far as drainage and water supply were concerned. The sanitary features have been well looked after. In some, as at Columbia, S. C., the soil is so porous that a drill can be held without difficulty the same day after a heavy rain.

EACH CAMP A GREAT CITY

Each camp is a great city of from 1,400 to 2,000 buildings, sufficient to house and accommodate 40,000 men. The distance from one end of a camp to another is often three or four miles, and from one side of a camp to the other some two or three miles. There is always in the reservation a place for a rifle range, though it has not always been constructed, and in a number of camps there is room enough for an artillery range, though the field guns as yet are few and far between.

The appearance of the camps is interesting, but not beautiful. The buildings are unpainted and the sites have frequently had to be cleared of timber, leaving stumps that don't add to the beauty of the landscape. I observe that the Quartermaster's Department has asked

for \$2,800,000 to paint the buildings inside and out, and I think it would be a saving of money to the government if this could be done. Certainly it would greatly add to appearance. The Young Men's Christian Association does paint its buildings green, and one's eye rests with relief upon them in these oceans of weather-stained yellow boarding.

The camps differ much in the roads constructed within their limits. In many of them within the reservation the main roads are good, but in muddy weather in some of the camps they are not what they should be. It would doubtless have been better if the roads could have been built before the buildings had been constructed, because the weather would then have been good for the building of roads, and it would have made the cost of transportation necessary in construction very much more reasonable. The roads from the nearest towns or cities to the camps also differ much, and some of them in the winter and in wet weather try cruelly the springs of the automobiles and the nerves of their occupants in going to and from camp.

THE MEN ARE COMFORTABLY HOUSED

The men in barracks are very comfortably housed. There are two methods of heating—one by great furnace stoves and the other by steam pipes. In the hurry of the job, and because of the difficulty of getting sufficient pipe, the system is not circulatory and wastes hot water at one end. This should be changed, and the quartermaster has recommended it, so as to make it a double system, which would be a great saving in the matter of water. It would probably offer a better opportunity for regulation. The criticism that can be made on the system now is, because it must be turned on or off from outside the building, it either parboils one or leaves one frozen in cold weather.

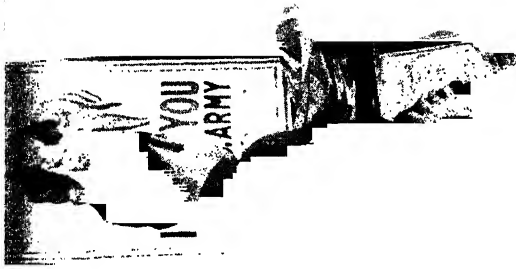
With some actual experience, I got the impression that the men on the whole are comparatively more comfortable than are the officers. There was in the beginning, it seems to me, an unnecessary disposition on the part of the officers to deny themselves comforts that they might just as well have had without any great amount of additional expense. Often, in-



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RECONNOISSANCE TRAINING

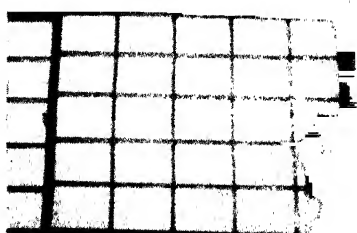
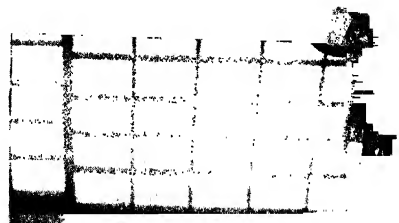
"See all; know all" is easier said than done. Without training, men see many things which they do not know that they see. Military observers must realize the significance of whatever comes within their field of vision. To this end these Signal Corps men are testing their observation powers in their own cantonment and telephoning their findings back to headquarters.



IN CAMP EVERY MAN WHO CAN SING CHEERFULLY DOES HIS BIT

© Committee on Public Information

War songs are the order of the hour, and during the recreation period every piano is a lodestone attracting our soldiers-in-the-making



© Committee on Public Information

THE SPIRIT OF CAMP CAN BE READ IN THE SMILE

Students of the ground school of aviation at Princeton enjoy the evening hour of recreation after a strenuous day



Photograph from M. Rosenfeld

HUNTING THE HUN IN THE BLUE ATLANTIC

The speed cruiser, making as high as 35 knots an hour and mounting rapid firers and depth bombs, is an effective means of combatting the "devil-fish" of Prussia, and abroad they have accounted for no small number of these marine monsters appearing within their cruising radius.

U. S. GOVERNMENT PRINTING OFFICE: 1964

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HARDENING AMERICAN MUSCLES FOR THE BIG STRIVE

Former President Taft believes that 5,000,000 of these stalwarts may be needed to win the war



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RANGE-FINDING INSTRUCTION

The distance from the field-gun to the selected objective must be quickly and accurately found—oftentimes under fire. This class of non-commissioned officers is being instructed in the intricacies of a newly adopted range-finder, which properly adjusted gives the required information at once. The gunner is given the range, the gun roars, and an observer watching through his field-glass sees a German battery go up in smoke.

deed, the haste with which conveniences were arranged indicated that no planning had been given from the standpoint of comfort. Certainly a woman would not have arranged the rooms and furniture and conveniences as they are now arranged at headquarters.

Nothing in the construction, however, has affected detrimentally the health of the soldiers. Very little of the illness can fairly be attributed to insufficient clothing, because while overcoats may have been lacking, they had sweaters and undercoats that kept the men generally warm.

THE HEALTH OF THE ARMY

Another error probably made in the construction of the camps was the failure to build the hospitals first; but in every cantonment, when I visited it, was a large base hospital, admirably equipped and amply able to take care of all who were likely to be ill in a full division, except under most extraordinary circumstances. The truth is that on the whole, considering the very great severity of the winter, which could not have been anticipated, the health of the troops in the cantonments has been excellent.

I wrote to General Gorgas, the Surgeon General, and asked him to send me the health statistics concerning the army. I received from him the following letter and table:

WAR DEPARTMENT,
OFFICE OF THE SURGEON GENERAL,
WASHINGTON, February 20, 1918.

Hon. WILLIAM HOWARD TAFT, New Haven, Connecticut.

DEAR MR. TAFT: Yours of February 15 is acknowledged. The data which you request concerning health statistics are inclosed. I am very glad to furnish them. As you go around to the various camps I would like to have you, where you have time, to take a look into the hospitals. The picture that the country has in general now with regard to all hospitals is unfavorable, and I am very desirous of having the people know the true picture, and particularly I would like to have you get the true picture. Such a picture can best be acquired by your seeing the hospitals in their actual working condition.

With kindest regards and best wishes, I remain,

Yours very sincerely,

W. C. GORGAS,
Surgeon General, U. S. Army.

What strikes me most about these statistics is that we have done better in death rate than did the Japanese, who heretofore have been looked upon as the most successful military sanitarians.

Annual Death Rate per 1,000, Regular Troops in the United States

	1898	1899	1900	1901
All causes	20.14	7.89	7.78	6.90
Diseases only	17.45	6.56	4.83	4.68

Troops in the United States September 21, 1917, to February 8, 1918

	All troops	Regulars	National Guard	National Army
All causes	8.7	6.1	9.9	9.1
Diseases only .	8.1	5.2	9.4	8.7

Average strength, Regular Army, September 21, 1917, to February 8, 1918	244,833
Number of deaths, Regular Army, same period—all causes	610
Number of deaths, Regular Army, same period—disease only	520
Average strength, National Army, September 21, 1917, to February 8, 1918	422,039
Number of deaths, National Army, same period—all causes	1,561
Number of deaths, National Army, same period—disease only	1,496
Average strength, National Guard, September 21, 1917, to February 8, 1918	375,427
Number of deaths, National Guard, same period—all causes	1,515
Number of deaths, National Guard, same period—disease only	1,430
Average strength, all troops, September 21, 1917, to February 8, 1918...	1,042,299
Total number of deaths, same period—all causes	3,686
Total number of deaths, same period—disease only	3,446

Mortality from disease per 1,000 strength for all troops engaged:

Chino-Japanese War.....	14.8 (Japan)
Spanish-American War....	25.0 (U. S.)
Russo-Japanese War.....	20.2 (Japan)

THE COST OF THE CANTONMENTS

The cost of the cantonments has been very great, but the hugeness of the task, the quickness with which it had to be done, the exorbitant prices which had to be paid under the circumstances doubtless explain the large expenditure and the great excess over the estimates. The estimates were \$3,500,000 for each camp. As a matter of fact, the cost of the camps

ranged from \$6,700,000 to \$11,000,000, as follows:

Camp Travis	\$6,700,000
Camp Dodge	6,800,000
Camp Taylor	7,000,000
Camp Gordon	7,400,000
Camp Grant	8,500,000
Camp Dix	8,500,000
Camp Custer	8,700,000
Camp Jackson	8,700,000
Camp Funston	8,700,000
Camp Pike	9,000,000
Camp Sherman	9,600,000
Camp Devens	9,700,000
Camp Meade	10,500,000
Camp Upton	11,100,000
Camp Lee	11,300,000

Of course, the National Guard camps use tentage, and the buildings there range from \$2,000,000 to \$3,000,000 for a camp.

The reported high commissions earned on these costs have not been understood. They were called "cost plus 10 per cent contracts," but this percentage decreased from 10 to 6 per cent when a certain cost was reached, and in no case could the commission exceed \$250,000. The percentage which was earned by the contractors varied from 2 to 3 per cent.

There were two circumstances which added to the cost above the estimate, in addition. One was that the Surgeon General, after the estimates were made, insisted upon 500 cubic feet of inside space per man instead of 365, as had been estimated for. The other was that in August General Pershing's change in the tactical organization to what are called Pershing divisions necessitated an addition to the barracks, which added a very large sum.

The result was that the National Army cantonments cost, complete, about \$141,000,000; the National Guard camps, \$38,000,000; the embarkation camps, \$14,000,000; the quartermasters' training camps, \$3,700,000; the machine-shop units, \$531,000; and the School of Artillery Fire, at Fort Sill, \$680,000, or a total of nearly \$200,000,000.

There was admittedly a good deal of waste in this expenditure, due to change of plans; but after reading the evidence on the subject, I cannot find that there is real ground for criticism, considering all the circumstances.

The task was a great one. It was done

with much dispatch and the object in view was well served.

JUST COMPLAINT AT DELAY IN TRAINING

The complaint in the camps, from persons competent to make just complaint, was the delay in the proper training of the troops—due, first, to the severe winter, which prevented any satisfactory drill in the open in the northern camps, so that there was no real opportunity to do anything outside, except hikes through the snow, to keep the men in good condition.

The second reason for the deficiency in the training of the men, or its delay, has been in the absence of tools. It took a long time before the needed rifles were furnished, and everywhere was lacking a supply of machine-guns. The management of machine-guns, entrusted to separate companies in every regiment, is a technical matter that needs much training, and there were neither Lewis guns nor other guns with which this training could be had. A third great defect was the absence of field-guns. There were a few on hand, but wholly inadequate in number for proper training of artillery units.

I think it would have been wiser if all the camps in the northern States had been placed in southern States. Even to a layman visiting camps, the greater opportunity for drill was apparent in the marching of the men. A review of 25,000 men, which I was permitted to see at Camp Travis, in San Antonio, showed a degree of drill that could not have been equalled, I think, in any other camp. There I witnessed, too, bayonet drill, bayonet charges over trenches, a sham battle over trenches, with hand grenades, and everything but a barrage of artillery. The difference in progress between that command and those in the far north could not escape the observer.

HEALTH CONDITIONS BETTER IN NORTHERN CAMPS

It is true that the health of the troops in the northern camps was better than it was in the South. The camps which suffered most from pneumonia were Camp Travis, at San Antonio; Camp Pike, at Little Rock, and Camp Funston, near Junction City, in Kansas, where, while



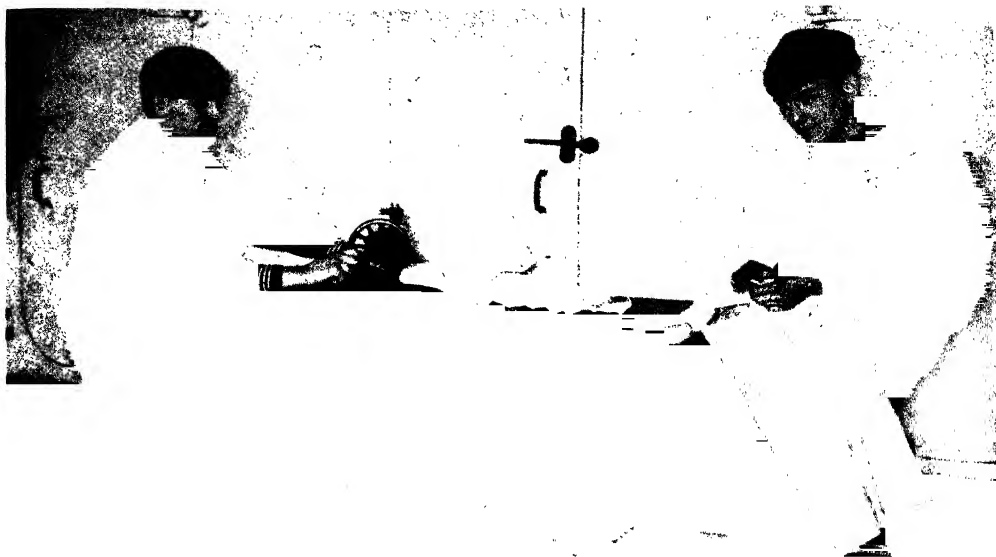
LEARNING THE ART OF MAKING ONE ROPE GROW WHERE THERE WERE TWO BEFORE
In the curriculum of the sea the gentle art of splicing is included, of course
Photograph by Edwin Levick



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LEARNING HOW TO GO "OVER THE TOP AND AT 'EM"

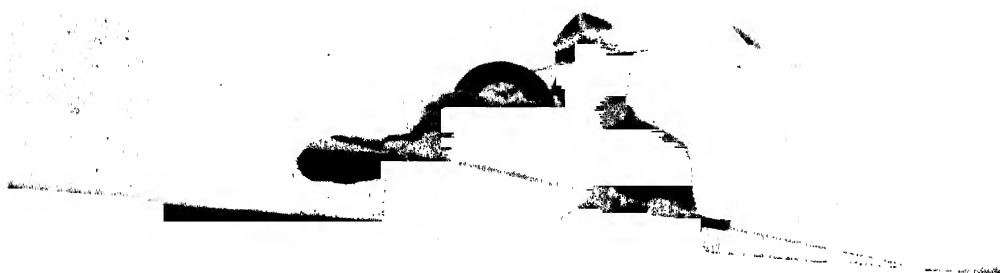
A class of non-commissioned officers of the 28th Keystone Division at Camp Hancock practicing an attack on the enemy trenches



Photograph by Edwin Levick

SEWING SHIRTS FOR SISTER SUSIE'S SAILOR

Knitted sweaters, socks, and helmets from the folks at home are welcomed by the men of America's navy, but there are certain emergency domestic jobs which the hand skilled in training a 15-inch gun has to perform with a portable sewing-machine.



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BAYONET PRACTICE BY U. S. MARINES IN FRANCE

they had cold weather, they had but little snow. These bad health conditions were doubtless due to the unseasonable and unusual conditions at these places.

At San Antonio and at Camp Funston the high winds blew the dust, so that it seemed to carry the germs. At San Antonio the prevailing trouble was influenza, followed by pneumonia. At Camp Pike the pneumonia came from measles. At Camp Funston the dust was dark and almost black loam. When I stepped from the train at that place a high wind was blowing and the dust was so thick that it darkened the faces of the regiment and its officers, so that they, although white, had the appearance of a colored regiment.

But, as already shown by General Gorgas' report, the health conditions are so much better than they ever have been in the past, that while we should not abate our effort to reduce disease, we certainly may felicitate ourselves and the War Department on the comparatively small percentage of deaths and illness.

As already said, at every camp there are four to five English officers and four to five French officers. The uniform testimony of our commanding generals is that these officers have been admirably selected. They are men who wear insignia showing that they have been in the trenches and in the places of danger on the front, have been a number of times wounded, and that they are very familiar with the needs of this modern warfare. They work very hard. They are admirable companions, they add to the enjoyment of headquarters life, and they are deeply interested in the work they are doing. They are often discouraged by the absence of tools, but in their lectures to the officers and with such guns and implements as they have had they are entitled to the greatest credit for the progress made.

SINGING AN IMPORTANT FEATURE OF CAMP LIFE

One thing that impresses a visitor to a camp is the real pleasure that the men can derive from singing. They must have a good leader—one who is active and rhythmic and histrionic and almost fantastic. There was one at Camp Devens,

named McEwan, whose work with the boys was remarkable. The songs "Over There," "Keep the Home Fires Burning," "Smile, Smile, Smile," "Tipperary," and "The Long Trail" are most catching in their air and most stirring in their effect.

I had the pleasure of addressing four or five audiences of negro troops. I prophesied that they are going to make a very effective part of our army. They take training well and they make excellent soldiers if well led. We have seen that in the Regular Army, in the 24th and 25th Infantry and the 9th and 10th Cavalry, and in the old 48th Volunteers in the Philippines. They are great, stalwart men, capable of enduring much, loving military life, amenable to discipline, and anxious to fit themselves.

THE GREAT LAKES NAVAL STATION

My last assignment, as I have said, was the Great Lakes Naval Training Station, north of Chicago. It was very interesting to visit this and to compare what the navy had done in its one great cantonment with what the army had done. The navy had 25,000 men to drill and train, and this cantonment is therefore about the same size, or a little smaller, than that of the army. There is a great permanent station, with accommodations for some 1,200 or 1,500 jackies in training, and of course this offers conveniences that are used in connection with the cantonment. The buildings are somewhat more stoutly built. They are painted and constructed on somewhat different architectural lines, both of which make them a little more attractive to the eye. They have also what the army has not—two very large drill halls. They gave me a review of 7,000 jackies in one drill hall, and it was evident that these halls in the winter season had been of great advantage for needed training in large bodies.

Another difference was the difference in the age of the men. The men were really between 18 and 22, and in their naval uniform they looked like cadets of a high or preparatory school. They were under excellent discipline, as one could see. They needed no instruction as to saluting, for that seemed a second nature to them, from the discipline they had had.

They were not as well able as the older men to withstand the test of my long addresses, and I thought I discovered a little more somnolence among them than I did among the drafted army. Of course, they were not so mature, but they were very bright, and they were certainly well drilled in the manual of arms and in the calisthenics with their rifles. It would be difficult to select a site where the winter winds have freer sweep than at this training station, but the buildings seemed to be well heated and the command in excellent health.

THE SELECTIVE DRAFT LAW VINDICATED

On the whole, the result of my trip was to confirm me in the view that the selective draft law has vindicated itself in every way. Its democratic provisions, reaching the rich and poor alike, its opportunity for selection of those who can do better work at home, are admirable features. It may be questioned whether the age limit should not be reduced to 18 years and from 31 to 28. Between 18 and 21 young men are less likely to have become settled in life and are required to make less sacrifice in becoming soldiers than men between 28 and 31, and it is not too much to say that men between 18 and 21 will make as good private soldiers as men between 28 and 31. Therefore the cost to the community in lowering the age limit is made less.

The draft law doubtless needs amendment, as defects appear in its administration, but it is a great tribute to the self-governing capacity of the American people that, with so little prepared and *trained machinery* and so few salaried officers, it has been possible to call upon the body of the country for locally self-created tribunals to administer the law and carry it through effectively.

AN ARMY OF 5,000,000 NEEDED

The law should be amended so as to authorize the President to increase the army from 1,500,000 to 5,000,000 men with the colors, or more. We must win the war, and we should now lay our foundations abroad so as to make that inevitable.

Of course, airplanes, artillery, and other instruments of war are necessary

in a modern campaign, and we should increase the supply as far as our resources will permit, but in the end this war, as other wars, must be won by trained man power. We should look forward with large vision and make ample provision so as to strengthen our allies, give confidence to our own army, and convince our enemies now of our determination to win the victory.

I am frequently much concerned to gather in perfectly loyal quarters the impression that the war will be over in less than a year. One may note in many centers of sinister influence suggestions that peace is to be brought about by negotiation with Germany. If this is the outcome of the war, it will be most humiliating to the United States and will only postpone further evil days for her. We have said, through our national spokesman, that we can have no confidence in a treaty made with William of Hohenzollern and his Prussian military régime. This was assumed before Germany's treacherous defeat of Russia through the disintegration of her army. In spite of her phrases of high principle she has disclosed again her real lust for territory and power, in placing her paw on the valuable parts of Russia. Now, therefore, we should be more determined than ever in our purpose to defeat German militarism before we consent to close this war.

WHEN THE WORLD WILL BE FREE AGAIN

We can raise as fine an army and as large an army as there is on European soil, and if we transport it as rapidly as we may and have it all upon European soil within two or three years, our object will be attained and the world will be free again.

On the whole, the deepest impression that is made by the camps and cantonments on the impartial visitor, without technical military knowledge, is the evidences on every side of the loving care of the American people for their boys in the service. Their food is of the best. My own boy in the ranks has told me that they have a tradition among the men—and think it is sustained—that their food is better than that of the officers. The provision in the hospitals, in the Y. M.

C. A., the Knights of Columbus, and the Red Cross, the theaters, the visiting musical, theatrical, and lecture entertainments, all carry the impression of which I have spoken. The men have to work hard. They begin early in the morning and they continue through. Of course, they have hours of leisure, but one of these cantonments is no idle place

for any one. It is a manual training school with long hours.

On the whole, therefore, I came away with a conviction that we had begun right. The draft law will win the war through American manhood, with its native courage, independence, and adaptability, instructed and trained in modern scientific warfare.

VOYAGING ON THE VOLGA AMID WAR AND REVOLUTION

War-time Sketches on Russia's Great Waterway

BY WILLIAM T. ELLIS

NO TRAVELER fully knows Russia who has not sailed down the Volga River—"Little Mother Volga," as the people affectionately call it—the stream which unites the cold North with the glistening sands of the Caspian depression; which flows through Europe and ends in Asia; which runs from furs to cotton, and which links the Baltic with the Caspian. To journey down the Volga amid the ferment of war and revolution and economic upheaval is to have as good an opportunity as can anywhere be found for studying the composition and mind of this bewildered and bewildering nation.

Naturally, there is no tourist travel in Russia during the war, and an "Americanski" is a marked and favored man aboard the comfortable Volga steamers. Since it befell that duty called me from Petrograd and Moscow to the Caucasus, with an obligation to observe Russia by the way, I followed the circuitous and slower route, in the latter part of August, 1917, thus building up, little by little, day after day, impressions of the people that were clearer than those obtainable in the two chief cities.

This Volga journey is so different from that across Siberia, which I have twice made, that one seems in another world—though both reveal imperial possibilities.

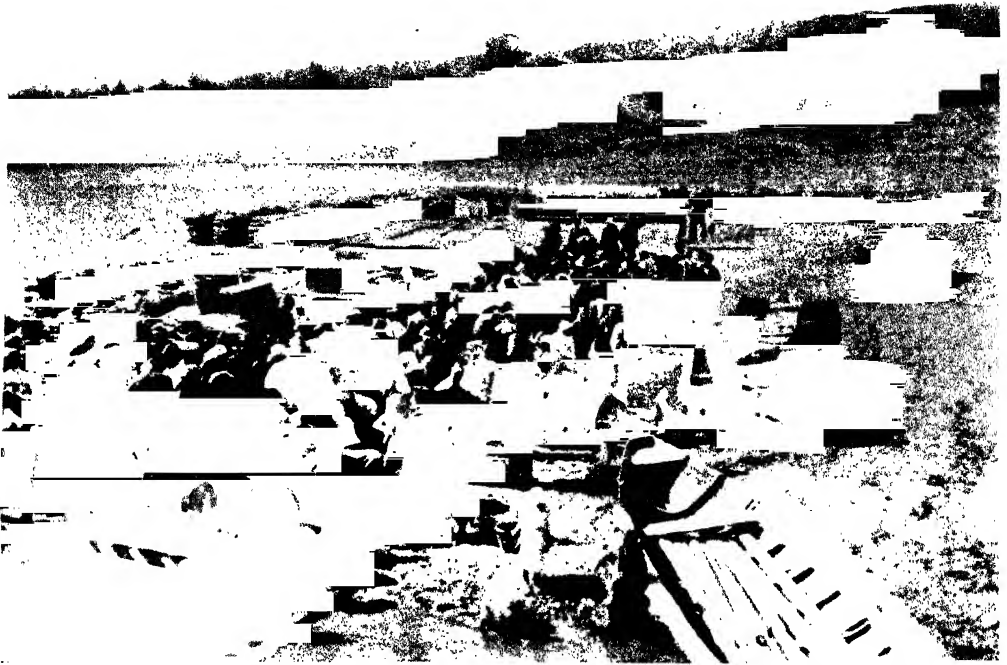
These experiences spell in large letters the potentiality of the Russia that is yet to be.

THE STORY OF THE VOLGA

Largest of Europe's rivers, and ranking high among the great streams of the earth, the Volga follows a tortuous, leisurely course, through a watershed three times as large as France, for 2,305 miles, until it pours its waters, through a wide delta of many mouths, into the briny Caspian, the largest inland sea in the world. Its rise is far up in the north, not greatly distant from Petrograd, with which it is connected by canals and the River Neva, thus linking it to the Gulf of Finland.

A large motor-boat or a yacht could doubtless sail from America to the Baltic Sea, and so, through the Neva and connecting canals, down the Volga to the Caspian Sea and the shores of Turkestan, the Caucasus, and Persia. So far as I know, no adventurer has yet essayed this romantic trip, so rich in historical associations and in human interest.

The story of the Volga is the story of Russia. Slav, Tatar, Mongol, and German all have left their impress upon its banks, not to mention the score of minor nationalities and tribes who still fill the eye of the traveling American. Khan



Photograph by Charles E. Beury

A LANDING ALONG THE VOLGA

"The idea of Russia's plenty is visualized along the river. Upstream ships are laden within and without with great hampers of fruit. At some small ports there are literally thousands of watermelons on display. Much of the fresh produce must go to waste" (see text, page 264).

and Mogul, the Golden Horde and the armies of the Czars, have written their stories about this water. The tangled tale of Russia's people and history can best be understood when read in the leisurely comfort of one of the steamers on the Volga.

Everybody has heard of Nizhni Novgorod, famous chiefly for its cosmopolitan annual fair, the greatest in the world, and for the capital place the city has long occupied in the history of Russia. Under normal conditions, Nizhni is only a night's journey in a sleeping car from Moscow. It is the chief city on the Volga and the beginning of navigation for the larger steamers.

A DESERTED CITY

So it was at Nizhni that I began a wartime journey down the river, after a dreary day in the city of the great bazaar;

for now the grass grows in the fair section of the Nizhni streets, and the rows upon rows of shops, to the number of about four thousand, are closed as tight as Philadelphia markets on Sunday.

The war has, for this year at least, put out of business the Nizhni Bazaar, to which for centuries merchants have been coming annually from out of the steppes of Tartary; from the villages of far Persia; from the hidden towns of Arabia, and from India, Japan, China, Turkey, and all the lands of Europe. This market-place has been unique in several particulars, one being that all the goods traded in were actually present on the spot. The annual volume of business is given by one authority as 250 million roubles.

Now, by those mysterious news currents which baffle understanding, the tidings had run to the remotest places of earth that there would be no Nizhni Ba-



Photograph by Charles E. Beury

OPEN MARKET AT ASTRAKHAN, ON THE VOLGA

"Russia is huge, and inchoate, and potential. Her people are at present adrift in their minds, as so many of them are adrift physically. They are in the grip of a great negation. Nevertheless, as surely as the turbid and tortuous Volga finds the shining sea, so surely will Russia one day emerge from her muddled and wavering drifting into the clear calm of a great and purposeful and brotherly national life" (see text, page 265).

zaar during 1917—though I was assured in Moscow that it was in full blast! No action to this effect was taken by any official body. Far from it. Nizhni, with the prosperity of its hundred thousand people at stake, hoped until the last. In two of the largest fair buildings, where pathetic trifles were sold to neighboring peasants, brass bands blared daily, in an effort to stimulate life and activity. As if by some occult agreement, the merchants simply failed to come. The shutters of the once busy bazaars, in the height of the historic fair season, were turned like blind eyes toward a world that gave no heed.

The Nizhni Fair of 1917 was one of war's casualties. Whether this archaic institution will ever again revive its ancient glories is a moot question. Will not trade turn to the great city centers of the world and to the conventional channels and usages of purchase and sale? The

economic upheaval which has accompanied the world war may easily wipe out this picturesque survival of an ancient order, established at the confluence of the Oka and the Volga.

TRAFFIC ON A BUSY WATERWAY

Even though the Nizhni Fair should pass, the traffic of the Volga is certain to grow, with the reorganization of Russia's transportation system. There are riches of many kinds to be gleaned along the banks of this imperial river, and its waters are rich in fish which are the chief source of the world's supply of caviar. Lumber, hides, grain, wool, fruit, vegetables, and dairy products are among the commonest articles offered to the needs of the many by this productive region. Cotton, too, comes up from Persia in great barges, while the oil fields at

Baku send in large, low-lying tankers only a fraction of the amount of petroleum they are capable of supplying to the upper reaches of the Volga. River craft use no other fuel than oil.

One of the sights of the stream is the huge rafts of lumber, many of them more than 500 feet long, towed at an almost imperceptible rate of speed by side-wheel steamboats. The size of these rafts is indicated by the fact that the wash of the big Volga boats does not have any apparent effect upon them. So long is the Volga journey for the raftsmen that they build log houses on their rough craft, and even occasionally raise vegetables and flowers in miniature gardens. As these men sit gathered about their camp-fires, floating downstream, they afford one of the delightful night scenes of Volga travel. It is woodsmen's life afloat.

As scenery, the shores of the Volga cannot compare with those of many an American river. Along the upper reaches the right bank is hilly and pleasant, but lower down the stream enters the depression that once held the larger Caspian Sea, and here sand-dunes are common, with occasional stretches of real desert. These steppes are inhabited by Tatars, whose cattle come to the river bank to drink and whose camels give a touch of the ancient East to the landscape. Towns are not as numerous as might be expected along so famous a river, although some of the cities have occupied an important place in Russian history.

THE BOLSHIVIK IDEA OF FREEDOM

Recently half a dozen of the Volga cities have made more than a little trouble for the central government by declaring themselves independent republics and so continuing for a few days. What does liberty mean, reason these simple-minded folk, if not the right to do as one pleases? In Nizhni the soldiers rose against their officers and slew many, so that a force had to be sent against them from Moscow. As there was no capital punishment in existence at the time, the insurgents were simply distributed among other military units.

Overshadowing every mile and minute of the Volga journey is the fact of the

war and the revolution. It is the topic of private conversation and of public discourse. "Swaboda," or "freedom," soon becomes a familiar sound, even to alien ears. No boat is without its soldier passengers, traveling, apparently, on individual initiative.

Immediately after the revolution, when all sorts of radical conceptions of liberty were abroad in the land, groups of wandering soldiers would take complete control of ships, driving first-class passengers from their state-rooms, on the argument, which I have since heard frequently advanced, in somewhat similar conditions, that the revolution overthrew the rich, and that now the poor should have the best. If the bottom does not come to the top and the top go to the bottom, wherein is the revolution? In one case the soldiers decided, after traveling a day, that they wanted to return to the port of embarkation, so they compelled the captain to turn the ship about and retrace that day's journey!

RAW MATERIAL FOR A MATCHLESS ARMY

That these big blond fellows, in grayish-brown fustian and khaki, could do anything lawless or really vicious seems hard to believe. They are like overgrown, good-natured country boys. They lie about the decks, sleeping most of the time, and as inoffensive as so many St. Bernard puppies. Their capacity for endurance seems limitless. They ask no bed but a board, and can curl up into the smallest space imaginable. For food they have nothing but the soggy black bread, which plays so great havoc with the digestion of foreigners; and often even that is not in evidence. Yet I have seen a group of these hungry soldiers travel for two days alongside great hampers of fruit and never touch a plum.

It is unthinkable that the lawless youngster which is dormant in every American soldier would not have possessed within an hour this unguarded provender. Thoughts of American militiamen clamoring for Pullmans are bound to recur to the traveling Yankee, as he sees the way in which Russian soldiers are herded on cold decks or, worse, in triple tiers of wooden bunks in box-cars.

Everywhere that one goes in Russia



Photograph by William T. Ellis

A VOLGA STEVEDORE

"They heartily bend their backs to unbelievable burdens. Often I have watched processions of them going up steep gang-planks, each man bearing a packing case—a full-sized, full-weight packing case, such as two draymen in America move only by turning from side to side" (see text, page 261r).

one sees soldiers. It is estimated that there are 15,000,000 men under arms here, though most of them are by no means at the front. The unorganized way in which they drift about the land is an endless source of wonder. Seldom are they seen by companies or regiments. Only once, and that was in the big training camp outside of Moscow, have I chanced to see soldiers drilling. It is commonly said that the purpose of the old régime in raising so large an army was to create industrial and economic chaos, with consequent disturbances, which would permit Russia, according to the treaties, to make a separate peace.

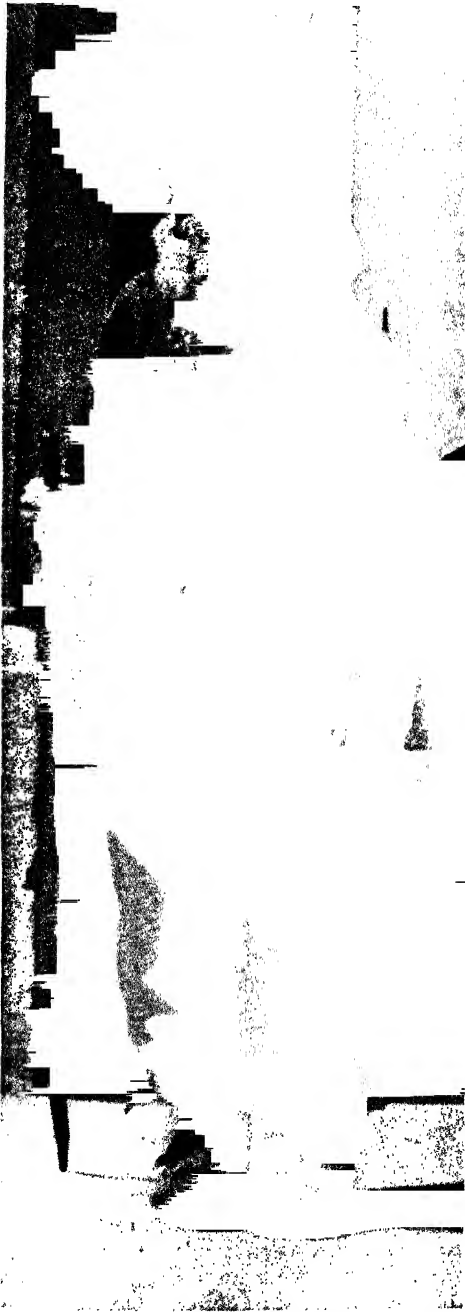
THE SEDUCTIVE INFLUENCE OF FREE
TRANSPORTATION

Whatever was the mind of the old bureaucracy, it has wrought something like a paralysis of industry among the Russian peasants, who, while the women

work, are enjoying respite from toil and the pleasures of roving from place to place, with free transportation provided.

Evil propagandists, "exiles" returned from America and from Germany, have greatly demoralized the army. No more fertile field for leadership, either good or bad, can be found in all the world than the Russian soldiers. Of late, however, the leadership has been mistaken. Given a clear vision of duty, these simple, trustful men will do it to the uttermost.

Partings of wives from soldiers are a sad spectacle, witnessed at almost every port of call. There are not many words, and usually only the silent sobbing of the women, until the boat starts, and then there may be a violent outburst that is heartrending to the listener. Much is said of the moral laxity of the Russian people and of the lightness of the marriage tie, but the story of true domestic affection is revealed in too many of these



Photograph by Gilbert Grosvenor

BEGGAR AT NIZHNI NOVGOROD

Russia has many beggars. But even among them one sees, in spite of their rags, faces that proclaim good hearts and genial souls. Better a beggar without even a crust of black bread than the well-fed barterer of his country's wealth!

scenes of separation for the observer to accept entirely such cynical generalizations.

Often they have their lighter side. At one wharf it was the wife and son who were leaving the soldier husband and father. Into the midst of the parting came a procession of stevedores, bearing great sacks of sunflower seeds, a common Russian delicacy. One man's burden struck a snag, there was a rent in the burlap, and forth poured a flood of the black and white seeds. Instantly the soldier's cap was off and he was holding it under this stream of unexpected bounty. What spilled to the ground other soldiers and small boys gathered, heedless, as they cracked the seeds skillfully in their teeth, of either dirt or germs. Thus the strain of one separation was relieved, for the wife, aboard the boat, was glad to see her husband's larder enriched.

WIVES TRAVEL WITH SOLDIER HUSBANDS

Occasionally, as in Mexico, the wives accompany their soldier husbands, their household effects wrapped in bundles and a baby or two on their arms or clinging to the mother's skirt.

Only one glimpse did I have on the Volga trip of the women soldiers, of whom I had seen many in Petrograd and Moscow. This was at Saratov, where a company of women soldiers were marching through the streets, led by a man officer. A moment before a company of male soldiers had passed, singing lustily the unforgettable Russian marching songs, which are their military music; but these women moved in grim silence, with set faces.

All of them were young—the youth of the Russian women soldiers is the first characteristic that one notices—but their cheeks were bronzed and their uniforms, which are the same as those of the men, were old. Many of them did not have puttees, and their footwear was varied, canvas shoes predominating. All of them wore their hair short. Clearly, for this particular group, the stage of novelty and enthusiasm had passed and had been succeeded by sheer resolution. Most of the glamour of soldiering had disappeared.

They marched in good formation, but



Photograph by Gilbert Grosvenor

CAB DRIVER AT NIZHNI NOVGOROD

The great fair city, where once the buyers of the world journeyed for barter and trade, is now almost as much a deserted place during the fair season as once it was in the northern mid-winter. Like Russia's martial spirit, it lies dead—perhaps beyond the hope of resurrection!

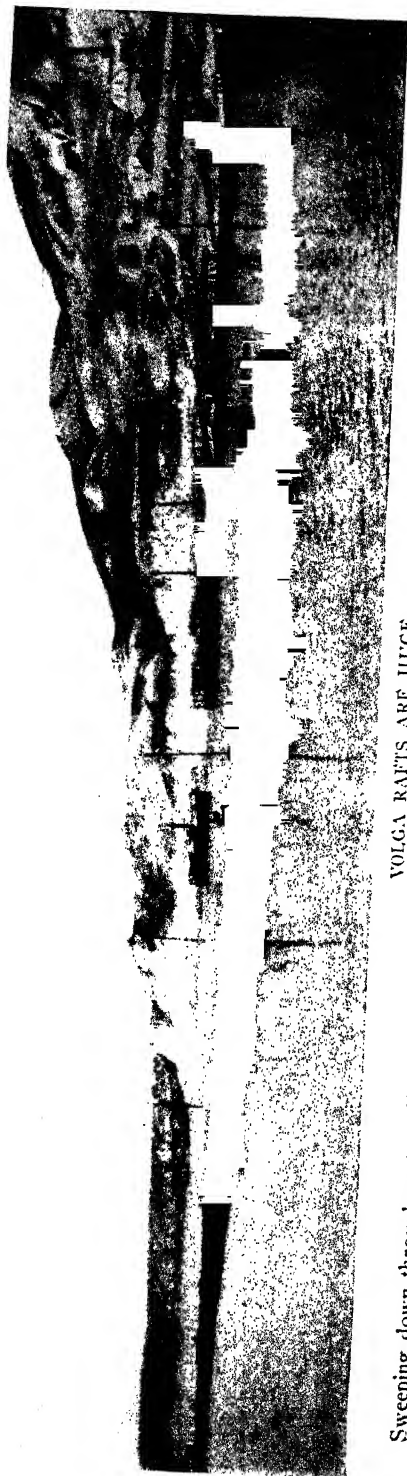
with more of doggedness than abandon or sprightliness.

All of these women soldiers belong to the everywhere popular "battalions of death," who are pledged not to retreat or surrender. Their effect upon the men soldiers has been twofold: some regard them as inspired saviors of the country, a sort of Joans of Arc; while others are inclined to jeer and make scurrilous re-

marks. In no instances, though, have the men given evidence that they regard the formation of women's battalions as a reflection upon themselves.

SPRING BEDS UNKNOWN TO THE MOUJIK

But, then, these private soldiers, over whose sleeping forms I have often stumbled on the dark decks and in unexpected corners of docks and highways and sta-



VOLGA RAFTS ARE HUGE

Sweeping down through eastern European Russia from a point southeast of Petrograd, first east to the great bend at Kazan and then south past Samara and Saratof to Astrakhan, the Volga, unparallelled by a railroad, and only occasionally crossed by one, is a great artery of trade up which move the products of Trans-Caucasia and Turkestan, and down which comes the commerce of northeastern Europe bound for south-eastern Asia.



A TYPICAL VOLGA TOWN

In times gone by many of the cities of the Volga region were wealthy and prosperous, taking toll from a rich river trade. Now they are all but starving. It is dishonorable now in Russia to be provident, and unpatriotic to advocate the keeping of international covenants, and prosperity can never dwell in any country that entertains such sentiments.

Photographs by William T. Ellis

tions, are not a keenly sensitive lot. They are used to a rough life; hardships are no new experience for them. When I would commiserate them for sleeping on iron decks or on wooden shelves or on the ground, I recall that they have never known spring mattresses. The black bread that makes ill those unaccustomed to it has always been their usual fare. A care-free, singing, sleeping—especially sleeping—lot of boys on a holiday they are, lacking the ebullient spirits of youth.

Only the manual laborer can understand their enjoyment of respite from toil. Most of these men, whom our boat so casually takes on or gives up at ports on the way, had never, before the war, been 25 versts from the villages in which they were born. Now they are tasting the irresponsibility of the open road, adventuring into far places and new scenes, learning as they go all sorts of new facts and theories about life. By way of its soldiers the whole of Russia has suddenly been put through a course in cosmopolitanism. These men are of themselves unenterprising and strangely lacking in initiative. They are not trouble-makers; a more inoffensive crowd of patient and long-enduring men may scarcely be imagined. Perhaps the simplest explanation of the absorbing phenomena of the Russian soldiers is to say that they are at present merely raw material—men in the making, but for the moment only children. They are sorely befuddled by the lack of leaders and slogans and standards; therefore they are drifting aimlessly about the land—unorganized, undisciplined, undirected, and ready to follow the mad radicalism of the first "boulshhevik," or extreme socialist, who gets their ear—and the Maximalists have shown an efficiency in propaganda that has been their one achievement in revolutionized Russia.

WHAT LEADERSHIP COULD ACCOMPLISH IN RUSSIA

If, instead of the radicals, the real patriots and democrats of Russia were instructing and inspiring the soldiers, so that the troops would have a comprehensible battle cry and a simple objective, there would be no withstanding these physically virile fellows.

Quite different were the group of soldiers who came aboard our boat at Kazan. Such as had uniforms seemed to be wearing those of the Austrian army, as we had come to know it from observation of German and Austrian prisoners in many towns and cities of Russia. These men, 30 in number, were singularly alert and well kept, their uniforms, or semi-uniforms, being in an admirable condition of spruceness. Each man wore a red and white ribbon somewhere on his coat, and we speedily learned that they were Czechs, or Bohemians, who had been conscripted into the Austrian army, and at the first opportunity, during the battle of Lemberg, two years before, had voluntarily surrendered to the Russians.

After the revolution the request of these Czechs to fight on the side of liberty had been partly acceded to. At the recent debacle on the Galician front these Czechs had behaved so valiantly that Kerensky had given them permission to form a separate Czech unit, and our fellow-passengers were on the way, via Samara and Kiev, to join their compatriots on the eastern front.

When asked what would befall if they should be captured by the Austrians, they cheerfully and graphically explained that they would be hanged; but that it was an unwritten agreement among them that before falling into the hands of the nation from whose power the Czechs seek liberation they would do as other Czechs had done at the time of the eastern retreat—shoot themselves.

THE CZECHS DESERT TO LIBERTY'S ARMIES

The ardor and intelligence and patriotism of these men, going smilingly to death for the old cause of self-government, was refreshing. When we proposed photographing them, they asked that it be beside their red and white flag, which flew from the steamer's top deck. This standard bore the words, "Czech Volunteers. Forward for Liberty!"

Every man of the thirty has relatives among the two million Czechs, or Bohemians, who have emigrated to America, most of them being found in Pennsylvania and in Chicago. There are eight million left behind, and these, we were told, are a unit in desiring independence.



Photograph by Gilbert Grosvenor

TWENTY-FIVE MEDALS DECORATING A POLICEMAN AT NIZHNI NOVGOROD

In the old days decorations were widely bestowed in Russia. Almost every supporter of the dynasty could wear one or more of them. But now who wears a badge is bourgeois and anybody who has anything is anathema. "Liberty, what crimes are committed in thy name!"

We saw our Czech friends later, marching in fine formation through Samarra, to the music of their own weird, staccato song, going gaily forward, buoyed up by the greatest of purposes, to the line of battle. They broke their discipline long enough to salute and then cheer their American friends—one more of the countless moving tokens of the kinship which all the freedom-loving people of

earth have with the great Republic of the West.

To be an American, anywhere among the allied nations at the present time, is to be the recipient of uncounted marks of consideration. The two "American-skis" on the Volga boat were especially favored in every way, and telegrams evidently preceded them at all points of change or debarkation; so that, amid all

the riot and clamor of a congested traffic, with the impossibility of providing accommodation for those desiring it, the Americans were cared for at every step of the journey.

RUSSIANS LIKE THE "AMERICANSKI"

Officials of the boats, army officers, and private citizens vied with one another to show courtesy to the Americans. While Russia is full of stories of the malicious efforts of the returned radicals from America—some of them unquestionably paid pro-German agents—to foment a feeling against the United States, and to attribute all sorts of sinister motives to our efforts to serve Russia, the experience of an American who has already traveled 8,000 miles in Russia is that the eyes of even the peasant and the soldier light up with new interest and friendliness at the word "Americanski" or at the sight of the little button flag on the coat lapel.

When we were introduced aboard the boat to Kerensky's assistant minister of war, en route to inspect the great munition plants at one of the Volga cities, the general straightway gave us an autograph letter to the commander in the Caucasus, ordering that all things be placed at our disposal, clear down to the front line of fighting, simply because we are Americans.

As the clear waters of the Kama, itself an imperial river, flow into the turbid



Photograph by William T. Ellis

ARMENIAN CHILDREN OF THE VOLGA REGION

Until the hand of history ceases to write down the chronicles of man and its records are forgotten, the world will never look into an Armenian face, be it that of youth or age, without recalling with a shudder the tortures these people have endured at the hands of the Turk. Their poverty is bad, their lack of human liberty is worse; but their bitter persecution ranks with the cruelties of the darkest ages and the most despicable tyrants of history.

Volga, keeping distinct for a time, like the waters of the Yellow Sea and the Pacific, but ultimately blending, so the Volga River basin represents the great blend of the diverse races that go to make up this marvelous Russia.

A POTPOURRI OF RACES

The distinct types are ever clearly before one, and also the amalgamation of the Slav and the Teuton and the Tatar



Photograph by William T. Ellis

RUSSIAN SOLDIERS ON A VOLGA BOAT: EVENING

Creature comforts are almost as unnecessary to the Russian peasant as are sheer luxuries to the people of the western world. He never slept in a bed with springs in his life, a bathtub is all but an unknown quantity to him. Give him a pillow for his head, black bread and soup for his stomach, and simple clothes for his body, and he has fewer worries than the ox that grazes in the pasture.



Photograph by Charles E. Beury

WAKING HOURS ON A VOLGA RIVER STEAMER

"The story of the Volga is the story of Russia. Slav, Tatar, Mongol, and German, all have left their impress upon its banks. Khan and Mogul, the Golden Horde and the armies of the Czars, have written their stories about this water. The tangled tale of Russia's people and history can best be understood when read in the leisurely comfort of one of the steamers on the Volga" (see text, page 245).

and the Semite. It is not easy to tell which of one's fellow-passengers are predominantly Slav and which are Mongol; Persian and Armenian sit side by side at the table, and until pork is served the American cannot tell them apart. So do costumes blend. Yonder Chinese (or is he a Mongol?) wears a wholly Russian costume, and our tall Cossack may be either a Georgian or a Circassian, though he looks like an Armenian.

As with the blood and costumes, so also is it with customs. Below us, on the forward deck, sits a family drinking tea from bowls, which they hold in uttermost Chinese fashion, rather than from glasses, in the Russian mode; yet one of the women wears a wrist watch and all are dressed as Slavic peasants. Alongside of them sits a woman who is combing her own hair, for various little reasons, while another is performing the same office for her neighbor, in the friendly fashion of India and of all oriental mothers.

The hair is a point of pride with both men and women in this country. Not only aboard ship, but even in the best restaurants, I have seen men publicly combing both beard and hair; frequently I have observed it among men at table. Even in the midst of the church service an occasional Russian priest will comb his flowing beard and locks; and I saw bishops and archbishops, in the ante-room of the procurator of the Holy Synod, make a complete toilet with huge combs which they carry hidden somewhere in their robes.

EXAMPLES OF HIRSUTE EFFULGENCE

On the other hand, there are apparent Nazarites who give no heed to their wild, unshorn locks. For example, there was the young chap whom we dubbed Horace Greeley, with his soft, straggling beard and a quizzical look behind his ill-fitting, silver-rimmed glasses, as if he were ever in the glare of the sun. His straw hat was fastened by a string, and he carried a carpet-sack, from which he was continually drawing forth food, so that his time was divided, like that of most Russians, between smoking and eating.

Many peasants and soldiers pay no other attention to hair, apparently, than

to cut it off square before it reaches the shoulders. For hirsute effulgence, however, commend me to the genial izhovstiks, or drosky-drivers, of Nizhni Novgorod; their whiskers are as ample as their coats, which, as all who have seen Russian Jehus know, is superlative speech.

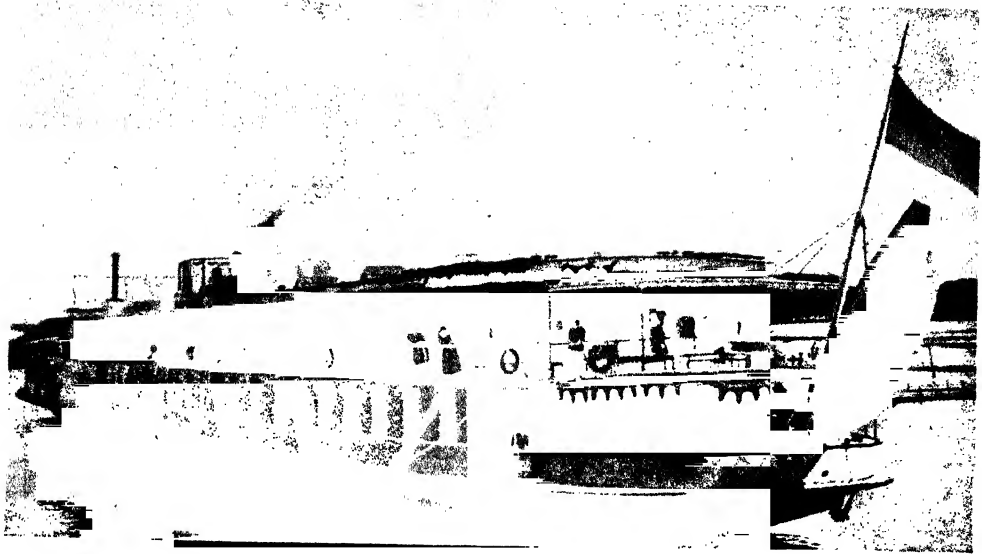
The greatest blend of Volga River travel is found among the fourth-class passengers. First-class cabins, high-ceiled and spacious, with no upper berths, are forward on the upper deck, with plate-glass windows in dining-room and music-room. Second-class passengers are aft on the same deck, with cabins and their own dining-room, the overflow sleeping in the dining-room. There is no distinction on deck between the two classes, and even the third and fourth classes, in addition to the soldiers, promenade the upper deck, in a merging consequent upon the revolution.

SCENES WITHOUT PARALLEL IN THE WESTERN WORLD

The third-class passengers have bunks, two tiers high (I have even seen men sleeping on the narrow luggage shelves above the bunks), while the fourth class simply camp down amid their luggage on the deck—forward, aft, along the rails, or wherever else they can find a foothold. The footway alongside the oil-using engines is lined at night with sleepers—men, women, and children—with faces screwed up beneath the glare of the electric light.

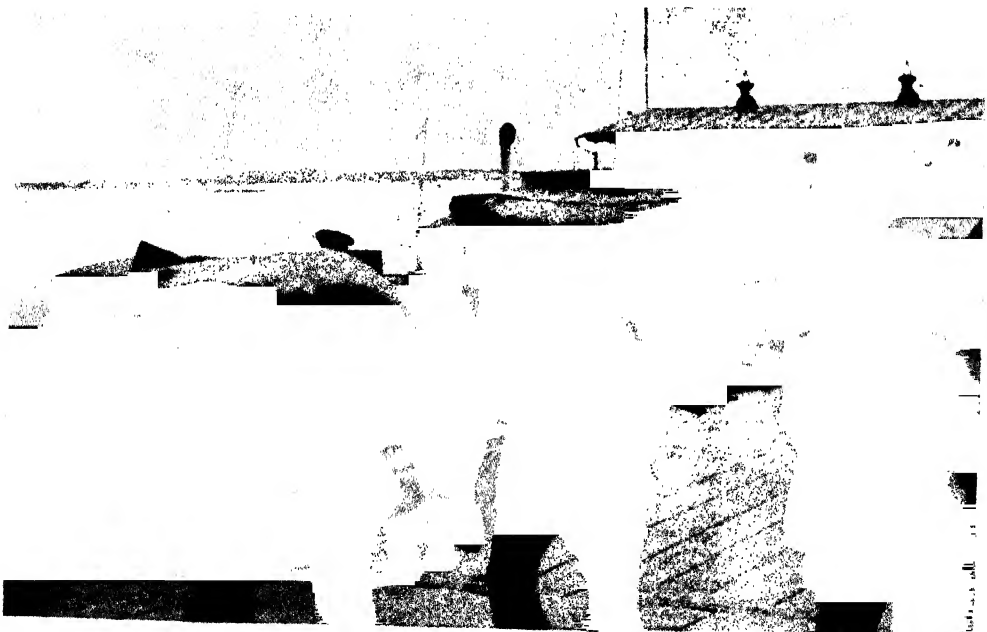
This is a scene with no parallel in the western world. Slavs, Mongols, Jews, Persians, Tatars, Circassians, Armenians, and gypsies all herd together in what appears to be a conglomerate and inextricable mass of misery. Each family or group is perched on or beside its bundles—bundles of cloth or of oriental rugs, some of them beautiful—and its baskets. Occasionally there will be seen an imitation leather gripsack or a gaily-colored tin trunk.

As most of these people are traveling with their household goods, it is easy to see what a family prizes. This one has a battered dressmaker's form. Yonder one iron dumb-bell, weighing 15 pounds or so, which a woman carefully treasures.



A VOLGA STEAMER

"As the clear waters of the Kama, itself an imperial river, flow into the turbid Volga, keeping distinct for a time, like the waters of the Yellow Sea and the Pacific, but ultimately blending, so the Volga River basin represents the great blend of the diverse races that go to make up this marvelous Russia" (see text, page 255).



Photographs by William T. Ellis

LANDING GRAIN FROM A VOLGA BOAT

Germany's scheme in the East is to open up the wheat fields of southern Russia by the separate peace route and move foodstuffs up the Danube into the heart of the Teutonic Alliance. Therefore, every ounce of butter, every pound of flour, every piece of meat, you save for the Allies is America's answer to Teutonic designs.



Photograph by William T. Ellis

LOOKING DOWN ON DECK PASSENGERS

It's a motley medley of human freight you see on the river boat of Russia in 1918. These steamers are packed and crowded and jammed. White Russians, Red Russians, Little Russians, Kirghiz, Turkomen, Gypsies—a great medley of humanity, few seeming to feel or care that the world is on fire and western civilization in the balance, so long as they can rest from the burdens of the time.

Musical instruments are common, and a huge gramophone horn is not infrequent. A child's toy sometimes has a pathetic first place. Sewing-machines are not rare. But mostly the array is bundles, huge and shapeless. Frequently baskets of fowls are carried. One sunny morning I made count of what I saw on the iron main deck, aft, in a space 25 by 45 feet.

SUCKLING PIGS AND SICKLY CHICKENS
TRAVEL WITH THE FAMILY

There were 60 persons in all visible, besides luggage. Fifteen of them were asleep and 45 were awake. Most of the passengers were women; some of the groups had not a man among them. But, then, the Russian peasant woman asks no odds of man in any test of strength, intelligence, or capability. Two of the women below, as I watched, were coddling sickly chickens in their arms, the fowls evidently having been victims of the congestion in the baskets. Another woman was airing a suckling pig on her

knee. Two women were knitting socks and two were making the toilets of children.

One woman was counting her money and wrapping it up in a rag—the dirty paper currency, which, in denominations of 30, 25, 20, 15, and 10 kopecks, is in the form of postage stamps, while the one, two, three, and five kopeck notes are larger, the 50-kopeck note being larger still. There is no clink of currency in Russia now. Metal currency has disappeared, save for some coppers down in the Caspian region. An American gold piece is worth five times its ante-war value; and in the bazaars, owing to the many-fold depreciation of the rouble, one may secure incredible bargains by the display of a gold coin—which is no little comfort, after the staggering war prices that are one's daily experience.

To return to the deck scene: Half a dozen of the women are eating and drinking, while one woman is selling scrubby apples, which customers cut into bits and put into their tea—almost anything edi-



Photograph by William T. Ellis

SOMETHING TO EAT AT A RIVER PORT

"That these big blond fellows in grayish-brown fustian and khaki could do anything lawless or really vicious is hard to believe. They are like overgrown, good-natured country boys. For food they have nothing but the soggy black bread which plays so great havoc with the digestion of foreigners; and often even that is not in evidence. Yet I have seen a group of these hungry soldiers travel for two days alongside great hampers of fruit and never touch a plum" (see text, page 248).

ble being an acceptable addition to the ubiquitous glass of tea. Four men are playing cards for money, while an eager company of spectators throng about them. Others are talking, smoking, eating, or scratching. Nobody seems unhappy, despite the huddled mass they all compose.

HANDS AND FACES GO UNWASHED

In this same space, occupying a fair half of it, we had earlier carried a company of dirty, ragged gypsies, who went ashore gypsy fashion, the man carrying the baby, and the woman carrying the tent-poles. I had noticed the man sewing on his corduroy trousers, while his wife stitched the tent. These people, with their black-eyed elves of youngsters, had contrived to improvise a tent on the deck; so they had a measure of privacy, though there was evidence that it was not privacy, but protection for their heaps of

nondescript bundles, that they desired. The gypsies were troubled even less than the other passengers by the lack of opportunity to wash their faces.

Perhaps a woman could have told how these deck passengers were dressed; it baffled me, for the raiment of the women seemed to be a general wrapping up. The distinctive and attractive costumes are worn by the men.

In one particular the peasant women of Russia and most of the East really have an advantage over their Western sisters: they and their husbands are freed from the tyranny of the milliner, for they wear nothing more than a kerchief or a shawl about their heads. Often these are the soft and beautiful Persian and Cashmere weaves; and I have seen on the heads of peasant women shawls richer by far in texture and color than any creation of a Fifth Avenue milliner. Their blend of harmonious hues and graceful designs is

so beautiful that the traveler covets them every one.

FORMIDABLE HEADGEAR

Even the elaborate headdress of the men is never so delightful as the best of the shawls worn by the women; but it is more striking, especially as the traveler draws near to Persia and the Caucasus. Huge lamb-skin shakos, of all shapes and no shape, are the accepted headgear even for August. I have seen them two feet high and almost as wide.

To counteract the warmth, or for other reasons, the Moslem keeps his head shaved; and the appearance of a man with a heavy black beard and no hair above his ears is at least unfamiliar to Americans. At every landing one catches new suggestions for comic costumes for stage use.

We carried from Astrakhan to Petrovsk a Persian whose lamb-skin hat, never seen off his head, at meals or at night, was no blacker than his villainous beard, which did not conceal the fact that his chin was only an inward slope, and that his teeth lapped fondly over each other. His eyes roved perpetually, in different directions, and he was ever on the grin. His coat was a long, gray one, with spreading skirt, and his shoes were picturesque green.

He was no more picturesque than the long-haired "anarchist"—who may have been merely a genius from New York, visiting his native Russia!—wearing what appeared to be a suit of pajamas, braided with black cord and frogs, and a black Windsor tie. He did not, however, as do many Russian men, wear a bracelet. At least he looked cool, whereas not a few of his fellow-passengers wore furs, making no change of costume the year around.

WHERE BATHING SUITS ARE UNAPPRECIATED

Nobody here sees any incongruity in persons clad in heavy furs and woollens looking over the rail at the natives—men, women, and children—bathing unclad. I have seen many bathers in various parts of Russia, but I have yet to see the first inch of a bathing suit. Even at Petrograd I passed a woman bathing in the

Neva within a hundred yards of passing tram-cars.

This leisurely travel gives occasion for philosophising upon many of the vanities of life. Thus, I have observed a greater number of handsome men at Volga landings than appear on all the moving-picture screens of America. Most of them were hamals, or coolies, or, as we would say, stevedores, dressed in rags, with a cumbersome pack-saddle on their backs, upon which they commonly bear loads of two and three hundred pounds. Unlimited material for matinee idols—Persians with regular features, black moustaches, and large, languishing eyes—is living its life of merry jest and cheer along the Volga, carrying burdens which two men would not essay on the docks of San Francisco or Philadelphia.

They have never heard that "Beauty is its own excuse for being," so they heartily bend their backs to unbelievable burdens. Often I have watched processions of them going up steep gang-planks, each man bearing on his back a packing case—a full-sized, full-weight, packing case, such as two draymen in America move only by turning from side to side. Nothing is carried except on the back. I saw a large drop-forge being borne ashore a few days ago, and while three other men were steadying it, the weight of the machine, which could not have been less than 500 pounds, came on one man's back. These professional burden-bearers of the Near East, Kurds and Persians and Armenians, carry heavier loads than even the Korean coolies or the hill-women of the Himalayas.

SONGS AND HORSE-PLAY LIGHTEN THE TOILING HOURS

As they toil they sing. Quips and jests and horse-play are common with these human drays as they race with one another up and down gang-planks. Songs of the Volga toilers are known everywhere, but I never heard them so well done as one night at a port where a square box, evidently containing a stone of many hundred-weight, was to be dragged aboard. It was placed on a long plank, as if to increase the friction, and this was drawn by ten men, pulling upon one rope. An extra stone, weighing two or

three hundred pounds, was carried on top of the box, as a mere unconsidered trifle.

At home, of course, rollers would have been put under the plank and the whole moved forward easily; but labor-saving devices have yet to find their way into this land, where man-power is the cheapest of commodities. As the team of ten men strained at the rope, they sang. Their leader, or cantor, was a long-whiskered patriarch who would have made a model precentor for a Presbyterian church—provided he left his dinky little round hat in Russia. He carried the solo parts of the chantey, and the chorus came crashing in with deep responses, richer by far than anything heard on the Potomac or the Mississippi. The performance would have gladdened a musician's heart, who straightway would have transcribed its melody. How the hardest toilers sing, the world around!

The Russian love of music appears in many forms. Frequently at ports of call we would be serenaded for alms by a crippled soldier and his family or by a group of maimed comrades. The man would play the accordeon—the piano of the peasant—and his companions would sing, and sing effectively, as apparently all Russians do.

SING, EVEN THOUGH YOU SUFFER

There is a strain of plaintiveness in these folk-melodies, even as in their church services, where the unaccompanied choirs make music that is famous for depth and richness. These long nights on the river, with an accordeon or the Russian triangular guitar usually within sound, gave one a fondness for the strains of this simple music. After all, it is a fine philosophy that these cripples and peasants teach: Keep your music portable; and if you suffer, at least sing. To rafts and docks and shores and passing craft, as well as from the fellow-passengers crowded on the deck below, I owe a remembered debt for Volga music.

Occasional landings break the monotony of the voyage down the river. Between Nizhni Novgorod and Astrakhan, the two terminal points of the steamers, there are several cities of historic and commercial importance—Kazan, Sim-

birsk, Samara, Saratov, Tzaritzuin. Passengers have time to go ashore for sight-seeing and for shopping, although the latter, nowadays, has to do strictly with the food supply.

From the American's viewpoint, Saratov is the best city of the group, although many an American town of one-fourth its size is better built and kept. These lower Volga cities show the predominance of the Germans, who were settled there by Catherine the Great and who lately have been more than a little inconvenienced by their German sympathies.

This element accounts for the presence of conventional western church spires in these cities and towns, for the settlers have remained Lutherans. Roman Catholic churches are more numerous, also, in this section. Even along the lower Volga the Greek churches and cathedrals, some of them very old, since this is not new country, dominate the landscape. Frequently the great church, with its domes and campanile, will be the one pretentious structure in a community. The vogue of the campanile, some examples of which, like the churches to which they are attached, are really beautiful, is sure to be remarked by the Volga traveler.

APPROACHING THE HABITAT OF THE MINARET

Not until he comes to a few picturesque Tatar mosques, as the boat nears Astrakhan, does the minaret appear; and even in the surprising and motley city of Astrakhan the mosques are few and humble and their minarets resemble the steeples of small country churches at home. One who has traveled much in the Near East, and is accustomed to the subordination of the church to the mosque, takes a rather unchristian satisfaction in the spectacle of an oriental region where the church buildings dominate the landscape.

That this is the East, one's ears make clear at every port. The noise is the babel of human voices; not the rumble of machinery or of motor-cars or of railways, but the shrill shoutings of the Orient, which does nothing without clamor. Quarrels are almost entirely verbal. I have not seen one stand-up and knock-down fight in all the turbulent experiences of travel in Russia; the nearest to it was

when two cabbies, or izhvostiks, clutched each other's big padded coat and pushed and pulled while they cursed.

The Russians really are a peaceable people, of a surpassing kindliness. In some of the worst jams aboard the boat I have heard the women use language such as on the battle front is transmuted into bullets; but of the good nature which usually prevails amid congested travel conditions, one cannot speak too highly.

FOOD THE PRINCIPAL OCCASION OF EXCITEMENT

Most of the excitement at ports of call has to do with food. This phase of the Volga voyage, or of life in Russia itself, deserves a chapter apart. The meal hours on the big passenger steamers were simply incomprehensible. Of course, "chai," or tea, was served, or made, in one's cabin or in the dining-room, at the time of arising, which might be anywhere from 9 to 12 o'clock. Nothing is served in the dining-room or from the kitchen and pantry between the hours of 12 and 2 o'clock at mid-day or between 6 and 8 o'clock in the evening! This is the rest-time of the servants.

Since the revolution all sorts of radical changes have come about in the lot of waiters, cooks, chambermaids, and other domestics. For one thing the fee system has been abolished, except in the case of hotel porters. Fifteen or 20 per cent is added to one's bill for "service."

Reforms in the hours of labor have also taken place; so that, for example, in Astrakhan it was impossible to secure a morsel of luncheon before 1 o'clock at the city's one leading restaurant. The night before it had been 8 o'clock before the Arcadia restaurant opened, though the hungry Americans got something to eat an hour earlier by being admitted to the city's leading gaming club, which had a buffet attached. On the boat, as I have indicated, there was strictly no business done in the culinary department within the hours when all Americans are accustomed to their meals.

As it worked out in practice, one's order for luncheon was taken at 2 o'clock and he was lucky if he got something to eat by 3. Commonly, we sat down to

dinner in the evening at 10 o'clock. If it were not for individual stores of food and tea-making outfits, there would be real suffering, since the distance between tea and bread upon arising and luncheon at 3 is of Marathon magnitude to a hungry American.

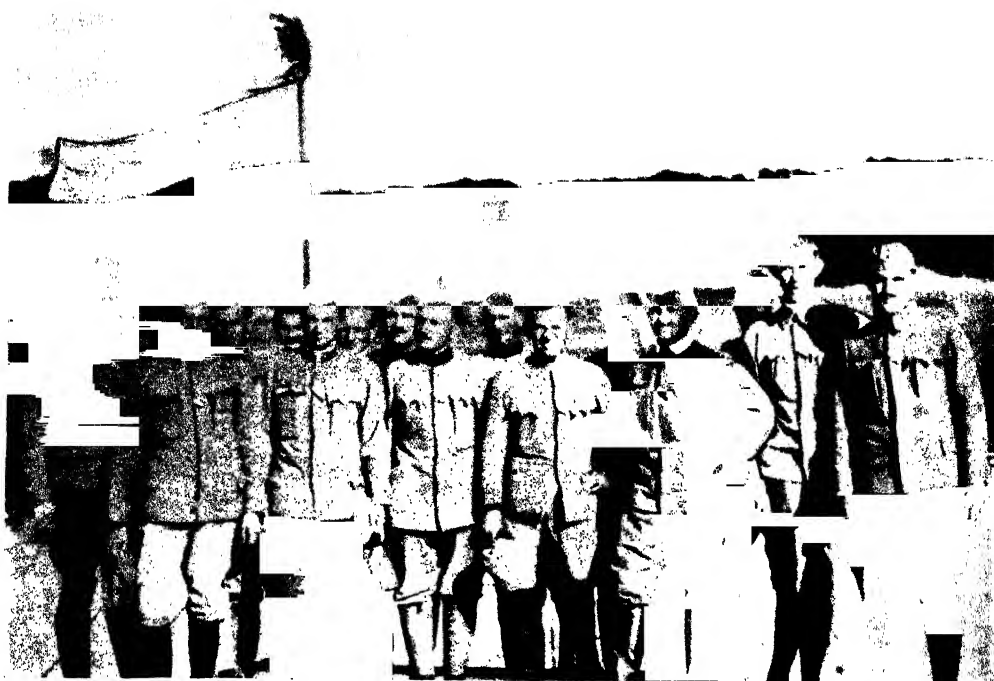
Contrariwise—and Russia is a land of contraries—the very next steamer we took, from Astrakhan to Baku, on the Caspian, served meals promptly at western hours—"little breakfast" at 8, luncheon at 12, and dinner at 6. So the eating habits of Russians may not safely be generalized upon, except that they eat with frequency and with disregard of standardized usages.

FORAGING AS A FINE ART

War's gentle art of foraging is no new acquisition for Russia. All travel is based on the assumption that most of the passengers will carry food with them or secure it en route. It is the rare person who depends entirely upon the dining-car or the ship's restaurant.

It is perfectly *au fait* for a gentleman, and even for a military officer, to enter the dining-room with a box of caviar, or a loaf of whitish bread and a couple of cucumbers, or a jar of jam in his hands. It may be that he carries dried fish by their tails or a watermelon under his arm. It is to secure these supplies that passengers rush ashore at every stop. Most have come from the sad and soggy black bread of Petrograd and Moscow; and before they are far down the Volga they find themselves in the realm of plentiful white bread, or near-white bread, and even, in some places, of real pastry.

There is abundance of grain in some of these towns, but the local committees will not permit it to be shipped out—another illustration of the everywhere-apparent fact that Russia's fundamental need is organization and transportation. The traveler has scarcely come out from under the depression of the bread lines of the North, and the nightmare of black bread, when suddenly, at Astrakhan, he finds himself once more in the black-bread-line zone. Of dairy products and fruits—milk, butter, cheese, eggs, melons, potatoes, onions, egg-plants, tomatoes,



Photograph by William T. Ellis

SOME OF OUR CZECH FELLOW-PASSENGERS ON THE VOLGA

"These men were singularly alert and well kept, their uniforms, or semi-uniforms, being in an admirable condition of spruceness. Each man wore a red and white ribbon. They were Czechs, or Bohemians, who had been conscripted into the Austrian army, and at the first opportunity, during the battle of Lemberg, two years before, had voluntarily surrendered to the Russians. After the revolution the request of these Czechs to fight on the side of liberty had been partly acceded to" (see text, page 253).

beans, apples, peaches, pears, plums, and luscious grapes—there is no stint in As-trakhan; but bread and sugar are procurable only by ticket.

Many river ports have food in plenty and the peasant women bring it down to the wharves. During the time the steamer is at the dock the scene is a busy one, passengers milling about, like cattle in a corral, as they pass from vendor to vendor, seeking bargains. This frequent exodus to the shore of shoppers for food is the most absorbing spectacle of the Volga River journey. It never loses its human interest.

WHERE GERMS ARE NOT SUSPECTED

The peasant women and children are patient, pleasant, and shrewd merchants. Neither they nor their customers are bothered by such trifles as dust or germs;

for the only booths of this bazaar are baskets and a few feet of earth along the dusty dock or its approaches. Here round loaves of dusky bread, 18 to 24 inches in diameter, are displayed, that they may later be gathered to the bosoms of hungry passengers and borne to their cabins. Lucky is the soldier who can pillow his head upon one of these loaves by night and munch upon it by day.

The idea of Russia's plenty is visualized along the river. Upstream ships are laden within and without with great hampers of fruit, carefully sewn beneath cloth covers. At some small ports there are literally thousands of watermelons on display. Small fruits are abundant. Some things are even cheap at places, as a watermelon for 10 or 15 cents and a loaf of bread for about the same.

Much of the fresh produce must go to

waste. The passengers on the boats do their utmost to prevent that undesirable fate for edibles, for they seem to be always eating, eating, eating. I cannot recall a single stroll around the deck, at any hour of day or night, when I did not see somebody eating and drinking. The overcrowded peasants on the deck below and the saloon passengers above are alike in this, that they are continually producing from their stores some sort of food to be eaten with the ever-present tea.

Still, one need not always study his fellow-passengers. There is the scenery of the shore, which, further down, includes the villages of the various Tatar tribes, with their round houses that look like haystacks; and far reaches of rolling meadow land and wheat fields; and hills and forests, and sand-dunes and towns and cities, with the wild ducks and geese flying between.

AN ENDLESS PROCESSION OF RIVER CRAFT

Then there is the incessant procession of boat life: 2,000 steamships regularly ply upon the Volga. Big barges, in groups of five or six, with half a dozen small boats clustered like barnacles behind, are towed by side-wheel tugs. Fishing craft, manned by Karmacks and other natives, glide by or are passed at anchor. From the shore comes the sound of church bells, made musical by traveling over the water.

Sunsets of surpassing loveliness, and sunrises which few Russian passengers see, cast a spell of peace over one's spirit,

and the war seems for the moment distant and unreal. It is difficult to realize that upon every incident of the trip is stamped the grim seal of Mars. Every soldier on the decks; all the man-work done by women; each scramble for food; the almost total absence of pleasure-seekers from these passenger steamers at the height of the Russian travel season; the partings by the way; the munition factories on the river banks; the driving of all passengers indoors when the ship passes under the great railway bridge across the Volga—all these spell the life and death conflict, internal and with a foreign foe, which Russia is waging.

As the reader has perceived, I have been endeavoring to portray enough characteristic incidents of a large and representative section of Russia to make clear something of the condition of the place and the people.

Russia is huge and inchoate and potential. Her people are at present adrift in their minds, as so many of them are adrift physically. They are in the grip of a great negation; the old order of autocracy has been cast off forever. But the great essentials and affirmations of democracy have not yet taken hold of this conglomerate and simple-minded mass of children. Nevertheless, as surely as the turbid and tortuous Volga finds the shining sea, so surely will Russia one day emerge from her muddled and wavering drifting into the clear calm of a great and purposeful and brotherly national life.





OUR PARTY, ALONG THE WADI MOTAIA, ENTERING THE HILLS IN SEARCH OF FRANKINCENSE TREES: SOCOTRA

Photograph by Charles K. Moser

THE ISLE OF FRANKINCENSE

BY CHARLES K. MOSER

FORMERLY UNITED STATES CONSUL-GENERAL TO ADEN, ARABIA

SINCE the days of the ancient Egyptians, frankincense has been employed in the religious rites of many peoples. Intrepid merchants of Persia and of Phœnicia sailed their argosies to the edge of the unknown in search of the fragrant resin equally prized by the high priests of Judah, the vestal virgins in their incense offerings to the gods, and the Romans who employed its perfume in the celebration of triumphs to their victorious Cæsars.

Frankincense is a gum resin obtained from certain trees of the genus *Boswellia*, found in East Africa and Arabia. An incision having been made in the bark of the tree, a milky juice exudes and slowly hardens in tear-shaped drops of yellowish hue. These are gathered as *olibanum*, or the true frankincense. The idea that frankincense was originally a product of India probably arose from a confusion of it with other odoriferous products of that country, and because of the fact that imported frankincense is sold with native Indian products.

In the Roman Catholic Church today it is recommended that frankincense constitute as large a proportion as possible of the incense used. In the Russian Church benzoin is much employed. The silver fir tree of Europe furnishes a resin which is the common frankincense of the pharmacopœias.

Among ancient and medieval peoples frankincense was the physician's cure-all, being confidently administered for fevers, boils, internal disorders, leprosy, as an antidote to hemlock poisoning, as a sedative, a stimulant, and a tonic.

SOCOTRA, ANCIENT SOURCE OF FRANKINCENSE

As a chip hurled from the woodsman's ax, Socotra seems to have been torn off in the making of Africa and flung away into the Indian Ocean. In ancient times Socotra and the southern Hadramaut

produced all the frankincense in the world, but today the largest supply comes from the Warsangli country, in Somaliland.

This fragment of the Dark Continent, 73 miles long by 35 miles wide in its widest part and lying 543 miles east of Aden, is said to be geologically older than eastern Asia; yet in the centuries which have elapsed since the argosies of Persia and Tyre sought it out for its precious balsams it has been almost forgotten. The Europeans who have visited it could be counted on one's fingers. Every ship that passes through Bab-el-Mandeb, east or west, sights its cloud-belted peaks—and gives it room; for Socotra has no harbors, and the monsoon snarls about its uncharted rocks like a hungry lioness lying in wait for her prey.

It was my good fortune to be one of a party, headed by His Britannic Majesty's Resident at Aden, which left the latter city with the intention of adventure and a week's camping-out in the cool Socotran Mountains.

AWAITING A ROYAL VISITOR

By great luck we had excellent weather, and at dawn on the third day we dropped anchor in a shallow bay, smooth and transparent as glass, about three miles from a long, curving, yellow beach backed with palm fronds. Still farther back stood a vast rampart of gray limestone mountains sticking needle-pointed peaks up into the clouds. These were the peaks of Haghier and we were anchored in Tamarida Bay. Before us, smothered in the palms, lay Hadibo, the capital of the island.

For an hour we awaited some signal to indicate that our presence had been observed. A royal visitor was expected to breakfast—His Highness the Sultan Hassan ibn Imad, lord of the isle of frankincense and of Kishn, on the south Arabian coast. Sixty feet below us, through the



Photograph by Charles K. Moser

COMING DOWN OUT OF THE MOUNTAINS: SOCOTRA

marvelously clear water, could be seen sponges and pink corals growing on the bottom; not more motionless were they than the life on shore.

Finally, a lonely figure detached itself from the beach and came shoveling (there is no other word to describe it) a three-log raft through the vitrescent water. He proved to be an ancient fisherman so remarkably like little Alice's friend that one of the ladies dubbed him the "Gogglywoggle" (see page 275). He had shells, fish of brilliant colors, and striped pots to sell; but at first trade languished. To every tender of money the Gogglywoggle shook his head. We were puzzled until an inspired Lascar offered him a handful of rice. Ten minutes later the old fellow had disposed of his entire stock for a few pounds of rice and a dozen ship's biscuit.

Breakfast and the long morning passed without any sign from the Sultan beyond the raising of the Union Jack above the palms. Chagrined and annoyed, we passed the hours watching the native

divers—magnificent black Tritons—bring up small coins from the bottom. They disdained all but the silver coins, which they melt to make gewgaws for the women. Socotrans have no use for money among themselves, though they can make use of it in their dealings with Arab traders.

WELCOMED BY THE SULTAN'S NEPHEW

In the afternoon, when the sun had somewhat abated, our party went ashore. A great gathering had assembled; hardly a man on the island but was there to meet us, saving only its lord. On the fringe of the throng and lurking shyly among the trunks of the palms were even a few women. Not many of them had seen a white face before. They crowded to survey us, and a nephew of the Sultan presented himself with many salaams and excuses. His Highness had a slight indisposition and was sojourning at his summer house in Haulaf, some eight miles away. Undoubtedly he would come tomorrow. Meantime, on behalf of his



Photograph by Charles K. Moser

FRANKINCENSE BLOSSOMS AND FRUIT

royal uncle, he presented us with the island and all it contained. The nephew was a big, upstanding, coffee-and-cream colored Arab, with a great scimitar of a nose and fine bushy whiskers, which he continually stroked with loving pride. He carried a superb jeweled sword that must have been a gift to the kings of the frankincense country from some Maharajah long ago.

Hadibo, or Tamarida, as the Arabs call it, from *Tamar*, the date-fruit tree, is a collection of flat-roofed white houses scattered among the palms. The Sultan's "palace" is a large mud structure with flat towers, and the two prayer houses are suggestive of the graceful Arab mosques only by contrast. The poorer population, chiefly of African descent and much older in the history of the island than its Arab aristocracy, lives in huts of thorn and plaited grass, invariably overrun with luxuriant gourd vines. Surrounded by tiny garden plots, in which tombac, or native tobacco, lentils, melons, and yams grow abundantly, they are more picturesque outside than inside.

There is not much to be seen in Hadibo. The principal amusement afforded the visitor is that of being seen; one is fortunate if any part of his person or belongings escapes much handling, as well as the sharpest kind of scrutiny. Yet they are a kindly folk, hospitable and quite harmless. Quarrels among themselves are said to be almost unknown.

THE LEGEND OF THE SIRENS OF SOCOTRA

They took us into their huts and showed us their few poor possessions—a primitive loom, a quern for milling grain, many unglazed earthen pots oddly striped with dragon's blood, some goatskin bottles to hold *ghi*—with none of that air of mingled resentment and loftiness affected by the Arab at such times. The women for the most part kept shyly veiled, or crowded behind the doors, while the men brought out their small stores of skins, dried tombac, lumps of frankincense, and aloes for our inspection. It is said that in ancient times the Socotran women exercised the arts of magic, and among the Arabs the legend still survives that they



Photograph by Charles K. Moser

PHOTOGRAPHING THE LEAVES AND FLOWERS OF THE FRANKINCENSE TREE

One variety of the Dragon's Blood is the tree seen in the middle, with two frankincense trees *Boswellia socotrana*, right and left. The trunks are about 30 inches in circumference, the height 25 feet. They are growing in very rocky soil at an altitude of 2,800 feet.

were wont to sit on the rocks and lure mariners to disaster with their smiles. Possibly the Socotran women were the Circes and the Sirens, so fatal to the old Greek sailors; but if so, their charms have sadly deserted them since, or the sailormen of that day were even more impressionable than sailors are now.

We returned from our visit to the capital along the banks of the *khôr*, or lagoon, that winds its placid way through the palms. Strangely enough, a strip of sand not more than 50 feet wide divides its sweet waters from the brine of the sea. There are several of these silted-in lagoons along the coast, and that eminent traveler, the late Theodore Bent, thinks they are the remnants of ancient harbors in which the smaller ships of those times easily found shelter.

Nothing could be lovelier than the sight of slender Socotran cattle grazing knee-deep among the grasses and the palm branches that line the banks of these khors. Clouds massed above and mountains near behind; long shadows dappling the water, and the sun turning to gold the tawny flanks of the cattle makes a picture of pastoral beauty rare to behold in this part of the East.

THE SULTAN'S DELIBERATE AFFRONT

By the middle of the next afternoon it was apparent to every one that the Sultan's continued "indisposition" was intended as a deliberate affront. He had no intention of receiving us. The thing seemed inexplicable, as Socotra is under British protection, and the Sultan, as the recipient of a bounty of 350 dollars a year, is liege to the British Resident at Aden. Nevertheless, there it was; such an affront as official dignity could not dare overlook in this ceremonial East. Worst of all, it was quite impossible for the party to attempt its camping trip in the mountains without the Sultan's aid. He had been notified of the visit weeks before, and we had expected him to meet us with camels, carriers, sheep, and all the impedimenta required for such a trip. We found nothing ready and our host supremely indifferent. Reluctantly, General Bell ordered our whole adventure to be abandoned and the captain to weigh anchor.

But for many months I had been endeavoring to get to Socotra to secure some frankincense trees for the Bureau of Plant Industry at Washington, and all my hopes of success had been centered on this trip. I knew I should never have a like opportunity again. As the result of my urgent importunities General Bell generously consented to keep the ship in harbor another 24 hours while I made a quick bolt into the mountains to find my trees, if possible.

Twenty-four hours is very little time in which to penetrate a mountain wilderness and bring back any sort of game, especially a rare tree, but there was no choice, and some quick action was necessary.

BLOWS AND HONEYED PROMISES FOR THE ARABS

Captain Arthur Mitchell, of the Royal Garrison Artillery, at Aden, elected to accompany me, and Major Jacob hurried his invaluable interpreter, Ali Hussain, off to find us camels and guides. An hour later we were ashore with all our baggage and provisions. By the aid of a tongue that fairly dripped honeyed promises of "baksheesh," and ship's biscuit, Ali Hussain had assembled a small regiment of camels and donkeys and their drivers.

Bedlam ensued. Each man wished only to throw the smallest parcel he could find on his beast, rope it and sneak away. There were not even enough parcels to go around. The Sahibs were a golden harvest, sent by Allah, for the especial enrichment of camel men. Ali was everywhere, bestowing here a kick, there a smile, and sometimes both together; but without the aid of Major Jacob, a master of the Arab and his vitriolic speech, I doubt if we should have ever got started.

In the end, our relatively small amount of baggage, servants, guides, drivers, and interpreters were bestowed upon six camels, five donkeys, and twelve men! It was an enormous robbery, but the Socotrans had a complete grasp of the situation. Our head guide, a fat Arab rascal, who had not felt a rupee in his hand probably for a year, demanded 15 rupees, or about \$5, per day for himself and his servant! He got it, too. Yet



AN ARABIAN KITCHEN AT ADEN: COOK AND BOY ROASTING
MOCHA COFFEE



THE AUTHOR, THE GUIDE, AND HIS CAMEL MAN WITH THE
YOUNG FRANKINCENSE TREE

these were the same people who had preferred a handful of rice to a silver dollar only two days before.

Our caravan had scarcely cleared the khor and got well on to the three or four miles of fertile, scrub-covered plain which divides the sea from the mountains, when the guide proved his mettle by suggesting that we camp there for the night. He had been made to understand clearly that his whole business was to bring us into the frankincense country at a point where we might be sure of securing some little trees that could be carried back to the ship, and he had glibly promised to introduce us to those trees by the middle of the next forenoon. Now the promises were so glibly renewed that my mistrust of him became certain and, much against his will, he was forced to push on. Even so, it was after sundown when we reached the glen behind Hadibo, where the Wadi Motaha broke a way for us through the solid wall of Haghier.

AMONG THE BEDOUIN CAVE-DWELLERS

The trail up the narrow gorge of the Motaha, worn by camels' feet and the torrential rains, is narrow, rocky, and exceedingly steep. In places it is scarcely wider than the width of one's beast, and the great thorn bushes beside it tear with insatiable claws at flesh and clothing. Flowers—yellow, blue, and crimson—some familiar, but most of them strange, and creeping vines over low trees gave the whole jungle the appearance of a lovely, unkempt garden—like a woman with disheveled hair. Occasionally one encountered the hideous cucumber tree, with its swollen and whitish stems, looking like enormous candles which had guttered horribly. This tree grows nowhere else, and the rest of the world is none the worse for it. Its proper foliage consists of a few tufts of leaves, with little yellow flowers at the top of its knobby branches; but we saw vultures roosting in nearly every tree and they seemed its fitting fruit.

After dark, when we were perhaps 1,000 feet up, lights appeared in the faces of the cliffs. These were the bedtime fires of the Bedouin cave-dwellers, who live on nothing but the products of their herds. They are a folk so timid that

we caught no more than two or three glimpses of them; but we heard their shepherd calls in the morning, and all through the night the lowing of cattle and the bleating of goats betrayed them.

At 10 o'clock, when we had been climbing on foot and dragging the animals up after us for some three hours, tired nature refused to be longer denied. We made camp on a partially bald knoll, littered with mounds and ancient grave-stones, near a place called Dahamis. While our Indian servants put up the tent under a spreading euphorbia, the men of Socotra ate a few handfuls of dates and rolled themselves against their prostrate beasts to sleep.

AN ENTRANCING SCENE

We were now about 2,000 feet up. The air was deliciously cool and toward morning it became even biting. Through the tent flap one could look down upon the whole valley behind us, bathed in a heavy dew. Eight or ten miles away the sandhills by the sea glistened in the full moonlight like mounds of silver; nearer, every leaf and stem in the scrub stood out in black and silver filigree; euphorbias and adeniums, gouty and pompous above the scrub, seemed like the fantasies on a Japanese screen. The whole landscape was a series of wonderful traceries in moonlight and shadow, entrancingly lovely.

With the dawn we were scrambling up the slopes again. Animals and baggage were left behind as useless. Guns were even discarded; the wild goat was free to kick his heels in our faces, if he liked, with perfect impunity. I, at least, was obsessed by the one idea to get my trees and get them back to the ship by the time I had solemnly promised.

We were now in a region of much larger trees, many of them very curious and all of them strange to me, except one which resembled, and most probably was, a species of the African baobab. Most interesting of all were three species of the famed dragon's blood—whose ruby-red fluid was used to dye the robes of olden queens—which stood all about us on the slopes, like battalions of skirmishers half hid in ambush.

The natives call these trees *A'ara-ecib*



Photograph by Charles K. Moser

SHEIKS OF THE SOCOTÉRI: THE LARGE-BEARDED MAN IS THE SULTAN'S NEPHEW

and their resin *M'soilo*. In ancient times Socotra was known as the only home of the dragon's-blood tree, but nowadays Sumatra and South America furnish the world's supply. It is rarely used as a dye now, but chiefly in the preparation of varnishes. The Socotrans themselves employ it principally for streaking odd designs on their earthen pots.

HOW THE FRANKINCENSE RESIN IS GATHERED

The guide, ordinarily a taciturn man, had been discharging a rapid fire of jargon, more than Greek to me, for some moments, when my nostrils suddenly caught a thin but rich balsamic fragrance in the air. We turned a few yards off the path and the guide, who had been frantically trying to prepare us for the moment, waved a triumphant arm:

"*Tee-leé-ah!*" he exclaimed. . . .

We were in the presence of what was undoubtedly a tree, but it looked nearly as much like an enormous sea-serpent in the act of shedding its skin, so awkwardly

contorted and alive it seemed. Tiny, whitish peels clung loosely about stems and bole of a peculiarly livid, blotchy hue. The woody fiber of the tree, distended with its viscous sap, was like nothing so much as decomposing animal flesh, and even the few bright red, geranium-like flowers on short spikes and the sparsely scattered tufts of sumac-like leaves could not soften its repulsive aspect. But it was indeed the frankincense tree we had come to seek, the *tee-leé-ah* of the Socotéri, the *olibanum*, or *al-luban* of the Arab, and the *Boswellia socotrana* of science. The fragrance hanging all about and the partially dried, resinous "tears," exuding from wounds in the bark made by insects, testified to its nature.

The guide, proud at last in the virtue of accomplishment, gathered us about him to drink a bowl of goat's milk and learn how the natives gathered *luban*. The process is simplicity itself. About a month after the rains begin, say in June, when the tree is swollen with sap, the Socotran gathers his household about him



Photograph by Charles K. Moser

THE "GOGGLEWOGGLE" (SEE PAGE 268)

and they go among the wild trees which tradition has allotted him as a family inheritance. Each tree is given ten or a dozen deep, oblique slashes two or three inches in length, and a wrench of the knife tears the lower end of the wound open to form a kind of pocket. In these pockets the amber-colored or whitish "tears" of resin collect, hardening slowly. At the end of a month the collector returns, rips out the partially hardened resin with the point of his knife, and makes more wounds in the bark. He repeats the process once a month until the end of September.

As soon as the *luban* tears are hard they are ready for the market, and they are usually bartered to an Arab trader for kerosene or cotton cloths from America. A tree in Socotra will produce annually about 8 pounds of *luban*, worth 10 cents a pound; a Somaliland tree will produce twice as much and of a quality twice as valuable.

This was all very fine; but as it was now nearly noon and all the frankincense trees in sight were 20 feet high and from 8 to 10 inches in diameter, I told the guide to hurry along and bring us to the little trees which we could take back to the ship.



Photograph by Charles K. Moser

A TYPICAL SOCOTRAN FRANKINCENSE TREE

"Why, Sahib," he exclaimed innocently, "these are the ones."

"Yes, yes, idiot. But where are the *little* ones?"

"FRANKINCENSE TREES HAVE NO YOUNG"

Such an expression of mingled astonishment and rascality came into his face: "Sahib, there are no little ones. Frankincense trees have no young!" . . .

When it was made plain to him that this answer had not appeased the Sahib's wrath, he sullenly explained that smaller trees were no nearer than two days' journey beyond the next pass. Diligent search of the adjacent slopes convinced us that he was at last speaking the truth.

There really were no small trees to be found in the whole gorge. The scamp had deceived us from the very start.

We were now about 3,000 feet up, 15 miles from the ship, and it was past noon. There was no time to go any further. I called the nine camel men together and promised a fat "baksheesh" to the man who brought me in a tree small enough to transport to the ship. Six of them did not display the slightest interest in the proposition, but the other three scampered away up the cliffs like goats. The rest of the party returned to the camp.

In about two hours one of the men returned with a tree 3 inches in diameter and 8 feet tall, which he had dug out of the hard red soil with his fingers. Half an hour later another came in with a smaller and better specimen. The third man we never saw again, as we lost no time in hurrying back to the ship. The two trees had to be carried all the way on the backs of their finders, as it became evident that if they were made part of the camels' burdens the thorns would destroy them. We reached Hadibo less than an hour late, but completely exhausted, and it was not surprising that howls arose from our followers for more pay and "baksheesh."

SOCOTRA'S EARLY CIVILIZATION

Aside from its strangely varied and odd vegetation and its bizarre scenic beauties, there is not much, perhaps, in this fertile, almost forgotten, island of Socotra to attract the tourist unless he



Photograph by Charles K. Moser

SOCOTRANS DIVING FOR COINS

be a student of ethnology. Old geologically, there are also still to be found in the ruins of Zoko, the ancient capital (Suk, the Arabs call it), traces of a very early civilization.

During our brief trip into the mountains we stumbled over four or five old burying grounds on the summits of easily accessible knolls, their flat and crumbling gravestones inscribed with what the traveler, Bent, declared to be Ethiopic graffiti. Christianity, undoubtedly of Abyssinian origin, gained an early footing in the island and probably survived, according to Bent, as late as the seventeenth century. Marco Polo and St. Xavier both report having found a debased form of Christianity among the Socoteri of their day. The churches have all disappeared under the intolerant heel of Islamism, but there are several ruined villages still remaining which the inhabitants point out as the work of the cursed Nazarinés.

Though the word Socotra is supposed to be of Hindu origin, the old Greeks

called it Dioscorides. Their ships visited it often for myrrh and frankincense, aloes, dragon's blood, and spices. Here the Greek sailors probably saw their "mermaids," too—the shallow Socotran bays are breeding grounds for strange sea creatures—and in their tales at home invested them with a beauty only possible to the Greek imagination. The two specimens of the manatee, male and female, taken in Socotran waters and brought to Aden are monstrous and horrible to look at, but startlingly half human, half fish.

Today Socotra exports practically nothing except *ghi*, a rancid butter, made from goat's milk and highly prized in Zanzibar. The inhabitants number about 5,000, and the bulk of them are of African descent, though Bedouins live in the mountain caves, and the ruling class is Arab. The language is distinct in itself, though possessing many Arabic and Mahri words. It has a wondrous wealth of gurgles and impossible noises in the



Photograph by Charles K. Moser

OUR FRANKINCENSE CARAVAN GATHERED ON THE BEACH

throat. There are no words for horse or dog, because these animals are not found on the island. A fine breed of camels and donkeys, which are the tamed sons of the wild asses roaming in thousands on the interior plains, are the beasts of burden.

THEIR "TELESOPES" MADE IN AMERICA

The Socoteri are for the most part a pastoral people, living upon their flocks and herds. They have neither inclination nor skill for the industrial arts. The baskets they weave and their earthen pots, fashioned with a bit of cocoanut rind in lieu of a potter's wheel, are rude imitations of the southern Arab's handiwork. Those who live by the sea catch fish or dive for mother-of-pearl. They have a most ingenious "telescope" for spying out the wonders that lie at the

ocean's bottom. It is simply a kerosene oil can, "made in America," with a sheet of glass set into one side. Into the opposite side the observer thrusts his head, and with the glass bottom well down in the water he is rowed slowly back and forth, mouth and eyes well protected from the salt water, which further serves him as a magnifying lens.

Having got our precious trees aboard ship, we lost little time in getting under way for Mokalla, on the south Arabian coast. There the Sultan met us in a motor-car and took us to his electric-lighted palace, where he was given the presents we had intended for his brother of Socotra. The frankincense trees, planted in a large packing-case half filled with their native earth, are still alive and give promise of some day throwing their fragrance to the breezes of Arizona.

A UNIQUE REPUBLIC, WHERE SMUGGLING IS AN INDUSTRY

BY HERBERT COREY

AUTHOR OF "ON THE MONASTIR ROAD," "SHOPPING ABROAD FOR OUR ARMY
IN FRANCE," ETC.

IT WAS quite by accident that I found Llivia. I had started out on a hunt for Andorra, that joyous little republic on the crest of the Pyrenees which is trying to live up to its medieval traditions by making an honest living as a smuggler during the world war. It is not every day that one finds a cheerfully outlaw State in the midst of moderately innocent outlawry. In Barcelona stories were told of the flagrantly public leave-taking of the mule smugglers from the great square of Vieille Andorra, and of the narrow paths by which the contrabandists who specialized in tobacco made their way into France. A visit to Andorra seemed imperative.

I had never heard of Llivia. Not one guide-book in three mentions it. Those that do give it a slighting four-line paragraph as "a Spanish village in France," and further impair a reputation that has been blown upon for centuries by alleging that the principal trade is in articles of contraband. Its stern old church and the lowering little fortresses the Llivians believe are homes, and the narrow, winding alleys in which mounted men were once helpless against cross-bows do not attract tourists.

Tiny electric lights now make the Llivian night visible, and there is a telephone in the Bureau of the Guardia Civile, at the corner of the Plaza de la Constitucion. But these modernities do not impair Llivia's status. Even its enmities are of the seventeenth century. Its people do not permit themselves to forget that they are Spanish people in a Spanish town set down by the accident of an old war in the land of France. One reaches them by a neutral road.

Because the Andorran smugglers furnish the reason for this narrative and Llivia is but the incidental decoration,

the story of Andorra should be told first. But I find it difficult to keep away from Llivia. There is something exquisitely anachronistic in this little town—it has but 600 people in all—whose men work in the fields by day and run loads of contraband into France by night. The hand of every officer of the law is against them. The neutral road by which one reaches Llivia from Spain is guarded by two posts of French and one of Spanish soldiers.

VISITORS REGARDED WITH JUSTIFIABLE SUSPICION

Strangers who wish to visit Llivia are regarded with a justifiable suspicion. When the carrier's cart in which the Spanish mails are carried jolts down the road, the bell on the neck of the fat old horse jingling merrily, the soldiers look into the cart and poke inquisitive fingers into packages. It seemed to me that the Llivians do not smile as do the cheerful Catalans on the one side or the French people on the other. They regard one dourly from under drawn brows.

But it is necessary to make a start for Andorra.

I left Barcelona, then, at six in the morning, the one hour of the day in which sleep seems desirable in this gay city. At 7 o'clock the rag-pickers begin their noisy rounds in the little donkey carts from which the "La Defensa" flag of their union floats defiantly to the breeze. By 9 o'clock the sellers of lottery tickets are in full cry. At 10 o'clock the *ramblas* are full of people, who gossip as they walk between the bird markets on the one hand and the flower stalls on the other. Many pretty girls, clad in the lightly floating costume suited to the Spanish summer, appear by noon, and from 1 o'clock on all Barcelona eats as



THE START FROM SEO D'URGEL FOR ANDORRA

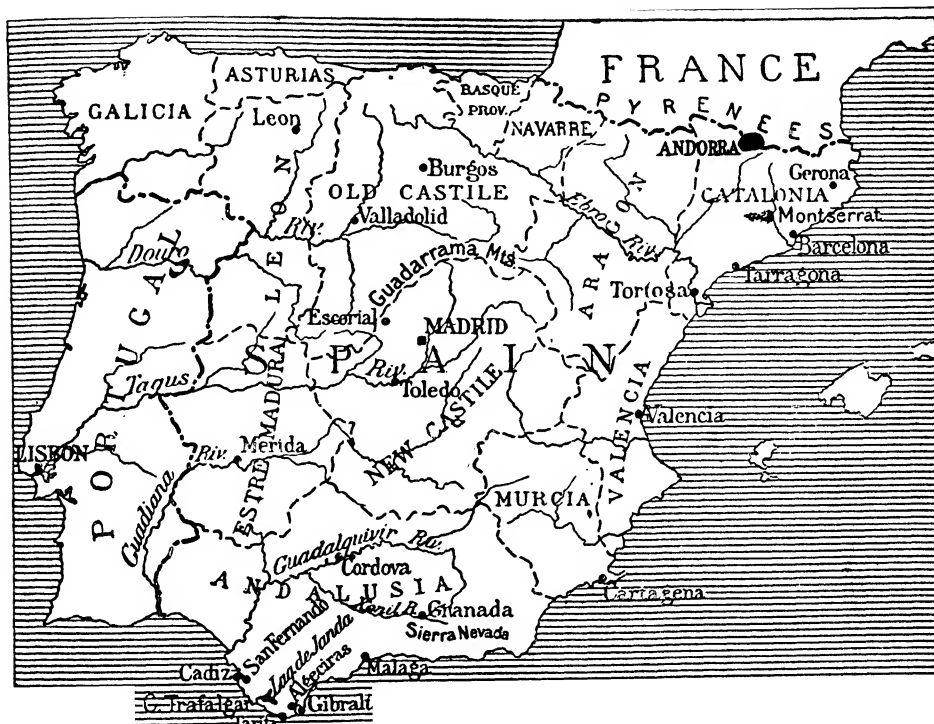
though eating were a rite. The revolutionists fill the streets at 5 o'clock and the government is freshly torn down with each fresh edition; and from dinner time until that hour in the morning when the last reveler nods sleepily to bed, the café concerts thump and squeal, and trams rattle and taxis hoot, and an unending stream of blind operators upon instruments of music stops before the restaurant terraces while their maimed agents clash coppers in little pans. The pan, it appears, serves as a cash register. The clank of a copper in the tin never fails to register on the sensitive musical ear, no matter with what fervor its owner may be attacking a difficult harmony. Decidedly, 6 o'clock in the morning has its somnolent attractions in Barcelona. It is cool then and the streets are wide and empty, and quiet comes to one as a balm.

TRAVELING IN THE SORT OF CART IMMORTALIZED BY DON QUIXOTE

At Ripoll a carrier's cart, of the sort that was cursed and immortalized by Don Quixote, waited. It had the body of a prairie schooner swung on two

wheels, while beneath the axle a net carried such baggage as could not be thrust upon the laps of the passengers or roped on the conveyance somewhere above the water line. We climbed in through a gate at the rear and sat facing each other, eight of us, all knees rubbing and all voices going at once. Later on the trunk of the boy who lived in Andorra and was on his way home from his first venture in the world was tied across this gate. Then we climbed in and out of the front end by clinging to the shaft and the harness of the rightfully dissatisfied wheel mule.

One was compelled to sympathize with this cynical beast. He did his part—one would say that he overdid his part—and certainly tugged quite as stoutly as did either of the horses that led the caravan. But the old man who drove the cart had two whips—one for the horses and one for the mule. The horse whip was a long and ornamental affair, with which he flicked at the rumps of the lead team; but the mule whip was a short, stout, business-like bludgeon, with which he battered that unfortunate. When the



SKETCH MAP OF SPAIN, SHOWING LOCATION OF ANDORRAN REPUBLIC ON THE FRENCH BORDER

whip-popping and the shouts which accompanied failed to stir the leaders into action, it was the old man's habit to lay aside his reins entirely and whack the mule until the noise startled into action the team ahead. One agreed with the mule that this seemed hardly fair.

From time to time the items of the human cargo changed. The home-coming boy, who had worked in a restaurant in Seville, was distressingly inquisitive. He had a few words of French, and kept at me until he had extracted every bit of information that our joint vocabularies could convey. Then he told the others.

His round, china-blue eyes stared unwinkingly during the eight hours of our cart companionship, but what he missed in courtesy was more than atoned for by the other passengers. Not one gave me more than a glance on entering, though they listened to the boy's story with grave attention. A girl insisted on sharing a basket of fruit, and a bent old peasant woman on her way to work in

the high fields, a leather bottle across her knees and her wardrobe in a pathetic little basket, helped to find lunch in a wayside inn. The pretty daughter of a hidalgo of the countryside pointed out the views that were revealed at each turn as we climbed the pass.

A MOUNTAIN COUNTRY RESEMBLING COLORADO

For the better part of sixty kilometers to Puigcerda, we drove through a mountain country familiar in every gray hill and green valley to one who knows our own Colorado. Sheep dotted the landscape, and the narrow meadows were farmed to the last inch. Now and then a golden ribbon wound about the dark shoulder of a hill where grain was being harvested. A terrace had been built there and fertile earth carried in baskets and the water from some overhanging spring coaxed to vivify it. Some of these little hillside fields seemed no wider than a cradle blade is long, and wandered in



Photograph by Herbert Corey

THE CITY OF ANDORRA, SHOWING TERRACED FIELDS ON THE MOUNTAIN SIDES WHICH OVERHANG THE TOWN



CHILDREN OF ANDORRA REPUBLIC, SPAIN



Photograph by Herbert Corey

THE PORTALS OF THE HOTEL DE VILLE,
ANDORRA

The arms and the Republic's motto, "Domus Concilii, Sedes Justicias," are above the door. The horses of the 24 councilmen are stabled on the ground floor when they meet. The deputies sleep, eat, and cook their own meals on the second floor.

the most decorative fashion along rocky slopes that seemed hardly fit for sheep pasture. It was as though a mural artist of the Titans had painted garlands on the canyon walls.

The carrier's cart jolted into Puigcerda through a country that might be France, except that a political accident made it Spain. Mountains hem in the little valley in which this old town stands. The trees were of that gray green to which one is accustomed across the border. The sound of running water fills the land. Everywhere little rills prattle down from the mountains and are trapped in irrigating ditches and tinkle away over stones and under overhanging tufts of sod in the most friendly and intimate fashion.

At first one wonders at the work that has been done upon this country, in comparing it to some portions of our own barb-wired and clapboarded farming States. The fences are boulder walls and the houses are of heavy stone; the irrigating flumes and larger canals are of rockwork that would almost withstand an earthquake and are concreted against the loss of a single drop. Then one recalls something of history. Men have been at work on these farms for more than thirteen hundred years. There was a bishopric at Urgel, the next stop after Puigcerda on the road to Andorra, in the sixth century, and the same bishopric is still there. Puigcerda was the capital of the land of Cerdagne more than a thousand years ago. There is a marble tablet in the old church which tells of the burial of a well-loved lady in 1310, and Puigcerda and the church were gray in age even then.

WOMAN AND DONKEY TOIL TOGETHER

At first one looks with a wholly American contempt on plowing done by oxen and marketing in which an old woman collaborates with a panniered donkey; but this gives way to respect. The farmers here make their hay with wooden forks cut from a conveniently molded sapling. After the mules have trodden out the grain they toss the wheat into the air from wooden shovels for the wind to winnow it, just as the Moors did before they were driven out of Cerdagne. The



Photograph by José B. Alemany

THE BYZANTINE CHURCH OF SANTA COLOMA, ANDORRA REPUBLIC

plows never have more than one handle and are sometimes mere crooks of wood shod with iron. But the sheaves piled high in the fields told of an intensive cultivation that has only made these fields more fertile in the centuries of use.

I had already learned there are two sorts of Spaniards. At Barcelona one is asked if one speaks Castilian or Catalan. At Puigcerda my national pride was somewhat abated by the discovery that there are two sorts of Americans. I sought to negotiate with the soft-voiced girl in the shop nearest the hotel for some postcards. A question revealed my status.

"Mother," she cried. "Mother, here is an American."

Mother came from the dark rear of the little establishment and smiled in a pleasant and wholly friendly curiosity. At first she was incredulous. Upon listening to the disjointed conversation she made known the reason for this skepticism.

"The stranger," said she, "is a Frenchman. Does he not speak French?"

"He is a North American," the daughter explained.

It was most flattering to have my French accepted at its face value. Herebefore it has only passed current among the graduates of schools of languages. Perhaps my heavy buying of postcards gave the girl a clue to my habitat, for she asked me if I had ever been in New York. Upon the admission she fairly beamed.

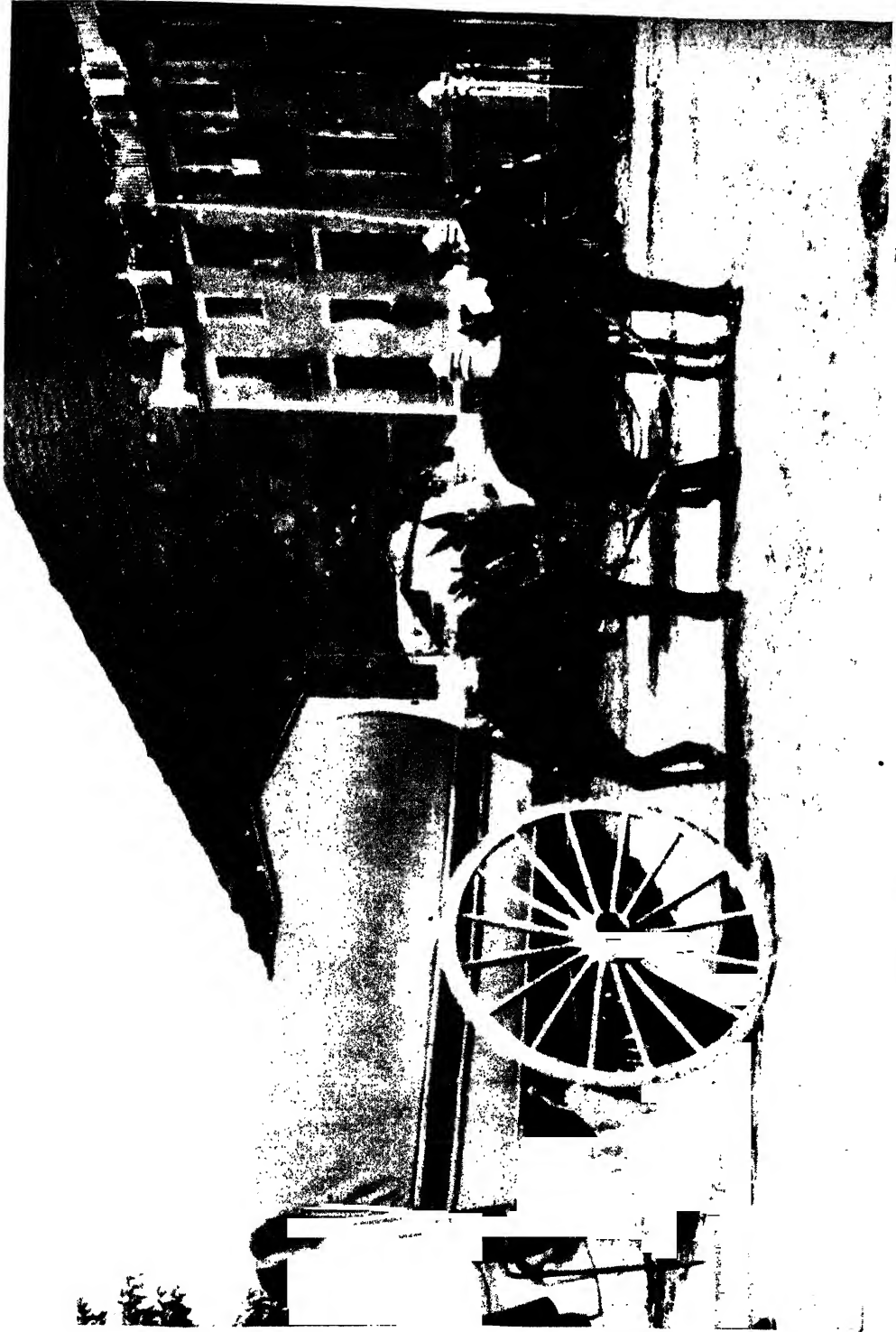
"I have something here from New York," said she.

She delved under the counter and produced a pasteboard box in which cartridges had been shipped by a firm in New York State, and pointed out the name to me in real pride. We turned it over and over in our hands as though it were a curio. She seemed to have kept the box in much the same spirit in which our grandmothers once kept the lacquered packages in which tea had been shipped from China.



Photograph from José B. Alemany

CANILLO, ANDORRA'S NORTHERNMOST TOWN: ALL HOUSES ARE BUILT OF STONES



Photograph by Herbert Corey

THE CARRIER'S CART IN WHICH THE START WAS MADE FROM RIPOLL, SPAIN



Photograph from José B. Alemany

BRIDGE AND CANYON OF SANT ANTONI, ANDORRA

It is said that on this bridge Charlemagne and the Count of Urgel signed the treaty of the liberty and privileges of Andorra

But the old lady was not satisfied. She had been revolving apparent discrepancies in her mind, and when I left she asked another question:

"Do the North Americans also speak English?"

SPAIN DRIPS WITH SPIES

In war time one wanders in Spain without the annoying formalities of travel in the belligerent lands. It is difficult to get into Spain, and much more difficult to get out, for the country drips with spies, and Spain's neighbors are insistent as to the credentials of travelers. Inside the line one wanders as he wills. An occasional visé from a police official is all that is required, and the police are even willing to abet mild errancies. It was from the host of the Hotel Europe that this was learned. Llivia's existence had just become known.

"It is difficult to go there, you understand," said he. "It is a Spanish village,

true; but it is inside French territory, and the French do not like to have strangers go there. It is true that one goes there by a neutral road."

The situation seemed difficult, but Catalan kindness conquered it. If the host of the Hotel Europe seems singled out, it is only because he is typical of all other Catalans with whom I came in contact. I was traveling without other visible luggage than a camera. My pockets bulged disreputably with the various necessities of life. I entered his hostelry filmed with dust after eight hours in a mule cart, and yet he went to infinite pains to aid me. With that fatuity that sometimes comes upon one, I tried to tip him. This is a public apology. It was he who solved the problem of getting to Llivia.

"I shall see the chief of police," said he.

These worthies contrived a plot against the laws of two countries. The chief wrote out a paper which, upon transla-

tion, seemed to be an asseveration in Catalan that I had long been favorably known to him as a resident of Puigcerda. The host of the Hotel Europe enlisted the carrier in the stratagem and drilled him in the story he was to tell. I was to say no word, for my pitiful incapacity in all tongues known in the Pyrenees would have betrayed me at once.

"The carrier will say what is necessary if the soldiers stop you," said the hotel keeper. "At the worst, you will only be inconvenienced for a few days."

A SPANISH TOWN INSIDE THE FRENCH FRONTIER

The chances of arrest seemed excellent, but they also seemed worth taking; for there is but one Llivia. Away back in the seventeenth century Spain paid for an unwise war with France by ceding 33 villages and the territory surrounding them to the stronger power. But after the Treaty of the Pyrenees was signed, Spain "rued back" on a part of the bargain. She yielded the 33 villages, as agreed on, but exempted Llivia on the plea that it was a town and not a village.

So for 250 years Llivia has remained a Spanish town inside the French frontier. It is Spanish in everything but location. The Spanish mails go there, and Spanish taxes are occasionally collected there, and Spanish money is taken, and there is a post of the Guardia Civile upon the public square. As one jolts down the neutral road toward Llivia in the carrier's cart, one could toss his hat on either side into France. The very water that runs in the irrigating ditches at the sides runs in French territory.

"The principal trade of Llivia," according to the guide-books, "is in articles of contraband."

At Llivia the stranger suffers from the unjust suspicion that he is an officer of the law. Elsewhere in Catalonia the people are friendly and of an American self-respect. The boy who brought the morning coffee at Seo d'Urgel shook hands affectionately when we parted. The carter of Puigcerda cheerfully perjured himself when the French soldier abandoned his midday drowse beneath a tree and came to look at me. The carter said we were friends, and later took the franc with

which this divagation was rewarded rather under protest. He was understood to say that any one would do as much for a comrade. Everywhere one encounters the most open-hearted and open-handed kindness. But at Llivia one is watched sullenly. Too often, perhaps, smuggling confidences have been betrayed.

So, I wandered unhappily through Llivia's tortuous thoroughfares, conscious of this civic distrust. There was a little girl who was blowing with a hand bellows upon the coals in the bottom of what seemed an early form of the tailor's goose. Ashes spurted out of vents at the side, and the coals at last glowed a yellow red in the hollow of the pressing iron. All this was magnificently new to me, and I beamed upon the girl and prepared to take a photograph when a long arm stretched from a doorway and girl and iron were retrieved. Then a door that would have withstood a battering ram closed softly in my face.

A TOWN READY FOR A SIEGE

But perhaps this pessimism is general and is not confined to the unvouched-for individual. The windows are barred with thick steel. Sometimes these bars are set with knife-like spikes, the edges of which have once been sharp, to catch the predatory arm that sought to reach through.

When a housewife goes to the municipal fountain to draw water or wash the daily salad, she closes her great, nail-studded door behind her and locks it with a key that might weigh a pound or more. If the municipal pig bothers her too greatly, she may withdraw this huge key from her girdle and throw it at him, so that it clangs loudly on the uneven cobbles in the rebound from his dusty hide.

There are overhanging balconies from which an attacking force might be resisted, and slits in some doors through which the caller is inspected before the bars are drawn. One might say that Llivia could stand a siege today, if only medieval means were used against her medieval defenses.

Even the church seems fort as much as sanctuary. One long old wall is pierced by loopholes for archers and is bare of any other window. It is defended at the corners by loopholed bastions. One gains

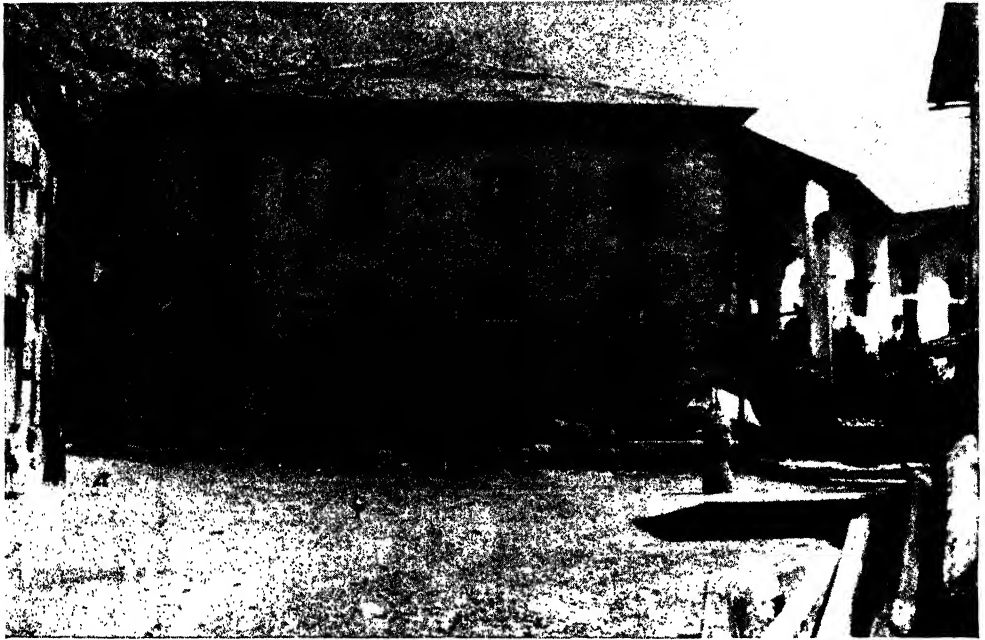


Photograph by Herbert Corey

THE SPANISH YOKE

This cruel method of harnessing oxen, which makes it impossible for them to move their heads, has descended unchanged from Roman times

ANDORRA LA VIELLE AND THE MAIN VALLEY TOWN OF LES ESCALDES FAR IN THE BACKGROUND: ANDORRA REPUBLIC
Photograph by José B. Alemany



Photograph by Herbert Corey

THE PUBLIC SQUARE OF LLIVIA

On the first floor of the house facing the square the mules are stabled, while the family lives above; in the bitter cold of a Pyrenean winter the arrangement has its advantages

entrance to the only vulnerable side, in which the great old door is set, by climbing a flight of steep stone steps, in their turn flanked by a tower which alone remains of the original defensive works.

The courtyards, in which oxen are kept under their owners' windows, much to the injury of the village sanitation, are thick-walled inclosures whose gates are great affairs of plank, well barred against aggression, and always overlooked by a window from which they can be defended. The town breathes age and a state of arms. One learns to look with distaste upon the parvenu Café del Progreso on the Plaza de la Constitucion. It is a mere newcomer, this café, with its date of 1791 carved above the lintel. It is only when one learns this marks the time of its reconstruction that it is received into favor.

LIFE OF LLIVIA CENTERS UPON THE PUBLIC SQUARE

It is upon the public square that the visible life of Llivia centers in the daytime. Now and then a wanderer called

at the Café del Progreso for one of the mild and sugared drinks to which the Spaniard is partial. A man shrouded in a great cloak and wearing a wide black hat pulled well down over his eyes passed and repassed. He had been a cart passenger and the carter had quite gratuitously assured me that he was a traveler in commerce. He was the breathing image of an operatic conspirator.

A small boy led a pig by a cord attached to a foreleg, and at intervals graciously permitted other small boys to hold the cord while he instructed them in the technique. A yoke of oxen swung slowly by, hauling a cart piled high with hay. But of the male residents of Llivia nothing was to be seen. If one smuggles by night, it is to be assumed that one sleeps by day.

The town crier was making his rounds when we returned to Puigcerda. He seemed as wholly out of date to an American as though a megatherium had been found strolling through these placid streets. He was an old man, most leisurely in his movements, and with an ex-

pression of confirmed melancholy. At first I attributed this to his knowledge that he was out of the modern picture. At intervals he blew a long brass horn, fishmonger style, so that I was entranced by it and followed him.

I had been watching the rope-walk under the eaves of the church, where an old man walked slowly backward all day long, a wad of hemp fastened to his girdle. He spun rope yarn from the spindles that were whirled by the belt from a wheel an irritated small boy turned. Later he twisted the yarn into rope in the same fashion.

The crier had not recognized at all that the time had passed for his leisurely method of diffusing information. When we reached the public square of Puigcerda, where a crowd waited the autobus that was to carry us to Seo d'Urgel, it became evident that his dejection had been occasioned by the lack of a proper audience. To the stranger and to the curious small boy who had trailed the stranger he had mumbled at intervals—always preceded by a stirring blast upon the trumpet—that a thrilling film of the life and adventures of Cristoforo Colombo was to be presented that very evening at the municipal theater.

AN ART IN TOWN CRYING

But in the presence of the throng in the public square, before that Hotel de Ville that was built in 1400, and which still bears the half-obliterated wheat sheaves of Puigcerda's arms on its walls, he became a different person. He registered emotion, as a movie man would say. His voice soared until it reached an oratorical climax, and then dropped to low and thrilling tones as he dwelt upon the pathos of this marvelous film. We who waited fairly hung upon his words. There is an art in town crying.

With every revolution of the wheels of the autobus toward Seo d'Urgel we moved farther toward the days of the Knight of the Mancha. Oxen began to wear fringed and beaded veils upon their patient faces. Men came down from the hillside farms, driving before them donkeys on whose pack-saddles were racks resembling five barred gates on which



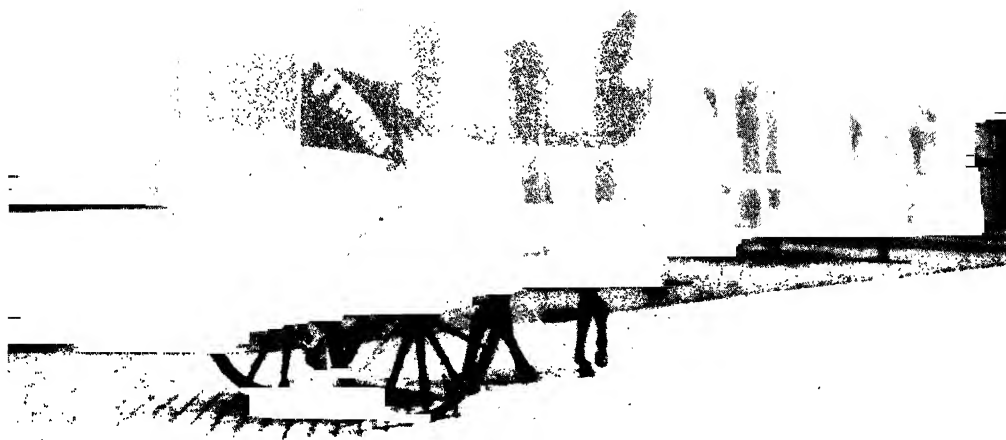
Photograph by Herbert Corey

THE NEUTRAL ROAD TO LLIVIA

The wall at the right and the water which chatters in the stone-lined irrigating ditch at the left are in France, but the road is neutral.

wheat sheaves were tied. Wheeled vehicles are current only on the main roads. Pack-mules jingled with bells and wore heavily brassed saddles on which every form of package was securely roped. The authentic diamond hitch was in use everywhere, so that one saw where the art of our Western packers was born. Chains stretched across the roads at the posts of the Guardia Civile stopped traffic for examination.

On the hilltops are the remains of castles and fortified farms, reminders of the days, not so far distant, when each man took what he could and held what he might. The twin inventions of repeating firearms and the Guardia Civile have made rural life in Spain fairly safe now, and the bandit no longer roams upon these roads. Nevertheless, the passer-by sometimes carried a rifle in the crook of



Photograph by Herbert Corey

A RAG-PICKER AND HIS CHARIOT FLYING THE "LA DEFENSA" FLAG OF THE RAG-PICKERS' UNION: MADRID, SPAIN

his arm, and the priest, who later rode down from Andorra with me, indicated that the knife is still a ready solvent of difficulties.

Perhaps I misunderstood him, as we talked by signs and scattered words, lacking any common language; but he shook his head sadly over the backwardness of his flock and pantomimed a dispute in the hills in most illuminating fashion. First the injured party shook a petulant forefinger at his antagonist; then there was an outburst of violent speech; finally the priest's hand flew to the belt of his black cassock, withdrew an imaginary knife, and thrust it so swiftly at my own girdle and with such a venomous air that I shrank coldly. He was a good priest, though. For slow miles he struggled with a statement until I finally made it out:

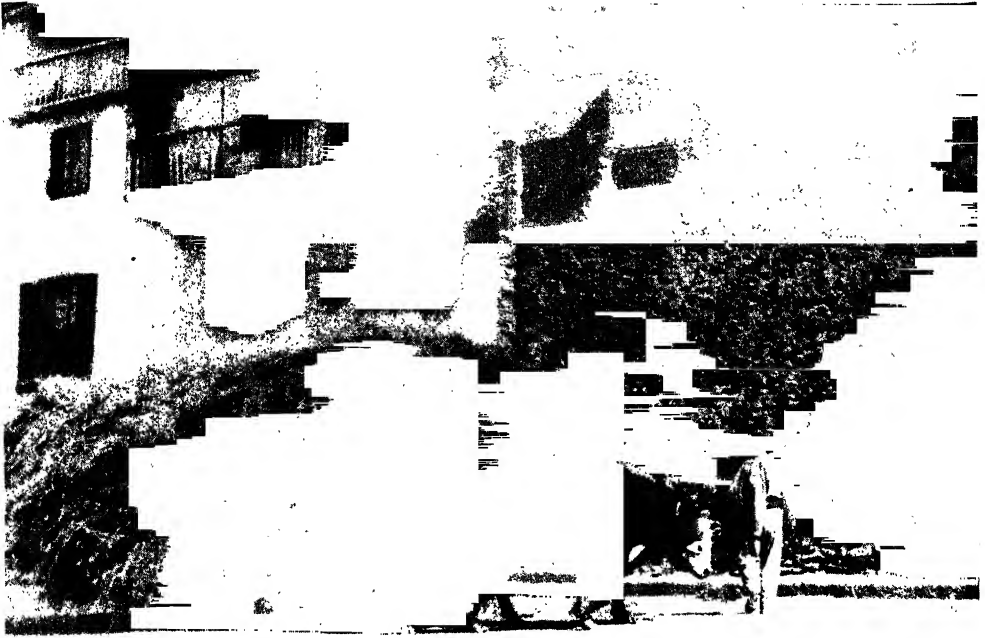
"AMERICA WILL BE THE FRIEND OF ALL
THE WORLD"

"It is good," said he, "that America has entered the war. For all the other

nations would seek to be masters if they won; but America will be the friend of all the world."

At Seo d'Urgel a temptation was resisted. The guide-books pay little attention to Seo—the country folk call it "Saao"—because it is off the beaten path. I had no time to explore it thoroughly. But certainly the "float," as a prospector would say, offered rich finds to the interested digger. There is a street of heavy, arched arcades, under loop-holed walls, through which little streets pierce at intervals, which takes one back at a glance to the Middle Ages.

They are for the most part two men wide, these little streets. Some of them are roofed over, and dim lamps twinkle in their twisty lengths. They tell of the days called good, when men were killed fervently in them with axe and sword, instead of being scientifically entered upon the casualty list by cold-blooded mathematicians hidden miles away behind hills, and who would be helpless without their books of logarithms.



Photograph by Herbert Corey

A BUSY SCENE ON THE PLAZA DE LA CONSTITUCION AT LLIVIA, THE SPANISH TOWN IN FRANCE

The open doors of the shops afford glimpses that tantalize the stroller. Shop-keeping in the bishopric of Urgel seems to run largely to the sale of pack-saddles, coils of rope, and firearms, and the fragrant scent of leather comes to the nostrils. It was just opposite the great pots built in a stone oven under the arcade, from which bean soup is served to travelers on market and feast days, that I encountered the temptation.

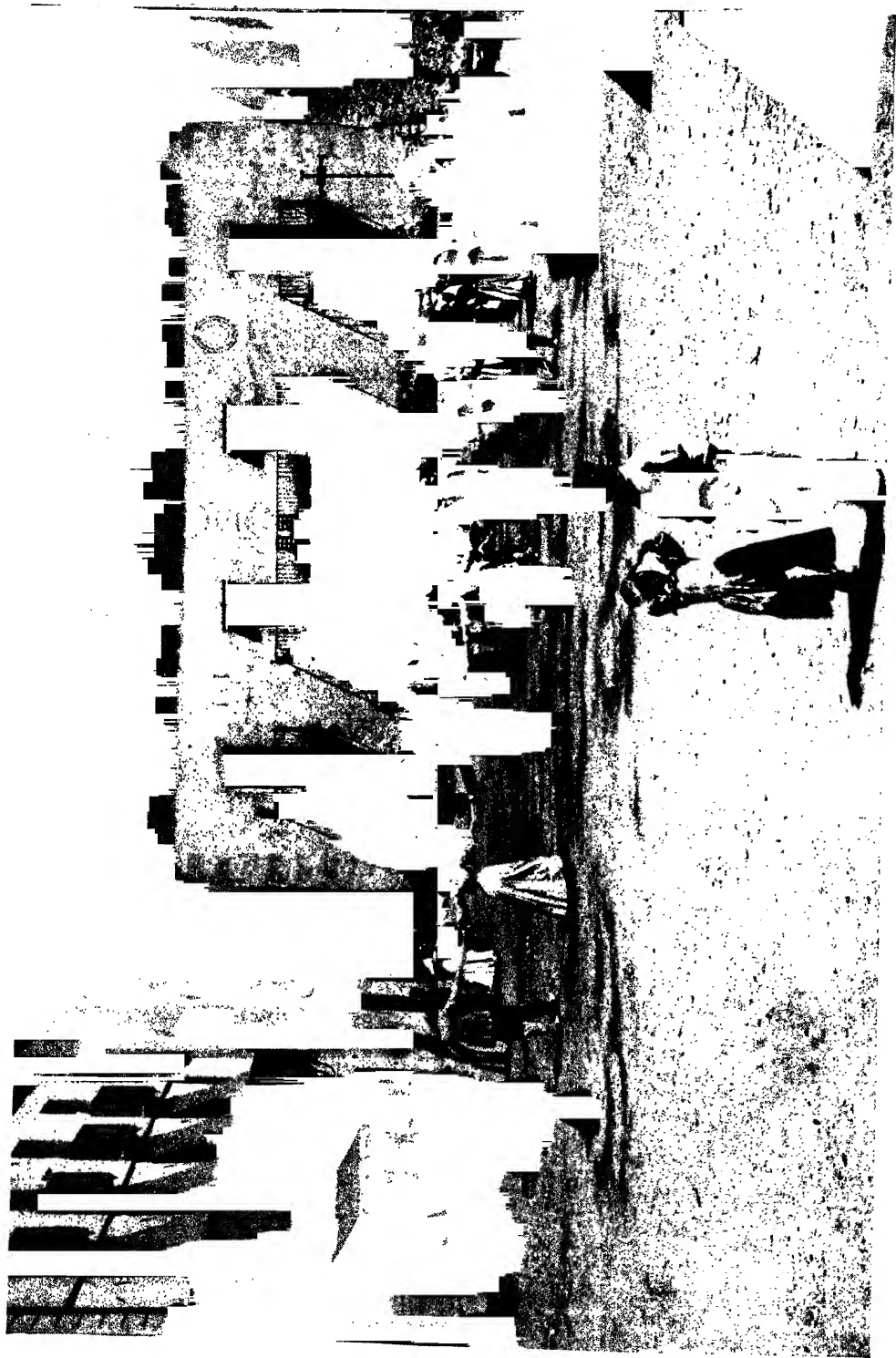
THE SHOP OF SKIN FLASKS

There is a shop there, a cavernous, dark, windy shop. The floor is clear of the ruffraff of rope and leather that one sees in other business houses. In the farthest corner a single candle is screened against the draft from the open door, and its tiny flame casts long, moving shadows of objects that swing lightly from the heavy rafters. There was a mysterious similitude of life about these things. They were faintly recognizable. It was as though many of the common domestic

animals had reversed their normal habit and had attached themselves flylike to the half-seen ceiling.

Then came enlightenment. These were wine sacks made of pig and goat skins, which by the art of their maker had preserved a horrible likeness to their original inhabitants. There was one small wine sack there—it had been the earthly integument of a tiny pig—that I coveted with all my heart. It swung in the breeze from the open door, the half light concealing the imperfections of its present and emphasizing the plump coquetry of its original state. Twice I walked past the door and twice I was redeemed from folly. A dusty wanderer whose solvency was only vouched for by the possession of a camera must have added to his handicap by the surreptitious fondling of a wine sack that uncannily resembled a little pig.

Many old costumes have disappeared from the Pyrenees. The men rarely wear sabots, and then only when they are at



THE "SARDANA," THE NATIONAL CATALAN DANCE, IN THE CENTRAL SQUARE OF ANDORRA. LA VIEILLE (ANDORRA THE OLD)

Photograph from José B. Alemany

work irrigating. Their footgear is usually the rope-soled alpargatax. Some wear a wide sash, but the crowd-color is chiefly furnished by the velveteens, which, chosen for their wear-resisting qualities, have with age and patches taken on almost Turneresque hues. Now and then one sees the scarlet Catalan cap, which folds longitudinally of the head and falls over one eye in the fashion once beloved of sea adventurers. Only on Sundays and fête days do the girls don the short skirt and low shoes of the artist's peasant. For the most part the skirt is short for utilitarian reasons, and all beauty of line is destroyed by their clumsy shoes.

SMUGGLERS REAPING A GOLDEN HARVEST

Doubtless Andorra smuggles at the best of times. That is the conclusion I reached; at least, from the perfect openness with which every one discussed the free-trade proclivities of the Andorrans. One might have thought they were talking of the spring plowing or the price of lambs. And yet Andorran secretiveness has become a proverb in the hills. "Tell a thing to an Andorran and it is lost," is one form of this saying. Nowadays, with the neighbor France in the market for everything that Andorra can furnish, and too busy fighting to watch her douanes very carefully, the men of Andorra are reaping a golden harvest. Scandalous rumor has it that the Spanish frontier guards look with a certain complacency on the illegal traffic.

"I have a cousin who is a frontier guard," a man in Barcelona told me. "He says that if the war lasts another year he will retire. At ten dollars a mule, he is already rich."

The situation of this quaint little survival of lost ages favors this form of activity. The Republic of Andorra measures about 25 miles in one direction by 20 miles in the other, and is located right on the crest of the Pyrenees. It is as though the little State were a wedge driven in and dividing France and Spain at this point. Charlemagne gave the Andorrans a certain measure of freedom because of their services in the field. They streamed down out of their hills and helped Louis the Debonair fight the Moors, with whom, however, they

had a very lively quarrel of their own. For that he gave them a franchise.

"IT IS A POLITICAL CURIOSITY"

Napoleon looked the little State over. "It is a political curiosity," said he. "It must be preserved."

Andorra has maintained itself as a political entity for more years than has any other republic in the world. The tiny State of San Marino, in Italy, vies with it in point of diminutiveness, but Andorra was hoary with age when San Marino was born.

It is not worth fighting for, and it makes no trouble that a few policemen would not quell. Nevertheless it is a real State.

Andorrans pay almost no taxes at all. Each year a small tribute must be paid to the Princee Bishop of Urgel and to the Republic of France, and a levy is made on the incomes of the Andorrans for the purpose. There are almost no other costs attached to the operation of the republic. Each of the six cantons in which the little State is divided elects annually four councilors, and the 24 select one of their number for president. They are paid a few sous each when they attend a meeting of the council. Their horses are fed by the State and they have their meals. Now and then the hall of the council needs a new slate on the roof. The annual budget stops there.

The carrier's cart left Seo d'Urgel when it was just light enough in the morning for me to see that my neighbors were all peasant women on their way to St. Julian de Loria, the first Andorran village one reaches and a famous resort of smugglers. Not so long ago a mere mule track connected Seo with the capital, but now a fairly good road follows the winding course of the torrent of the Valira. Coffee is not to be had out of hours at a provincial Spanish inn, and we were more than sharp set when the carter turned us out at St. Julian and made us walk up a grade the mules could not negotiate with a full load.

A FETE DAY IN ST. JULIAN

It was a fête day in St. Julian, it appeared. A stand in the public square, which was a mere bulbous enlargement of the cart road, had been decked with



Photograph by Herbert Corey

THE OLD ROPE-WALK: PUIGCERDA, SPAIN

greenery. A girl dressed in the fête-day costume of the hills—a white bodice cut modestly low, operatically short skirts, and low shoes—ran to meet the discontented little violiniste who had frowned on us and on her peasant mother from her place in the crowded cart. The violiniste was dressed in the cheap finery of Barcelona, with high-heeled shoes of poor leather, badly scuffed and run over at the heels, while around her neck she had wound a boa that had been built of chicken hackle. The sister was charming, but the feminine in her led her to admire the awful tawdriness of the violiniste.

"Thou art in grand *tenuë*," I heard her say.

There was time to see that the public square was filled with men putting impatient feet against the ribs of rebellious mules in the effort to pull tighter the ropes of the diamond hitch. Loads were going across the hills, fête day or no. Other tired men straggled in at the heels of tired mules, the pack-saddles empty, after a successful trip into France. Small boys were importantly aiding.

Girls clung to the arms of the *contrabandista*, and old women waddled about with parcels that looked like provisions for the departing. Then came the call to breakfast, and the smugglers were forgotten.

There were tiny trout served at this one *peseta* breakfast, and toasted bread and doubtful coffee; but the undoubted *pièce de résistance* of the table was an automatic fly-swatter that ran by clockwork, and which at least made the swarming flies respectful. Wine was served in the two-spouted bottles from which one pours the fluid at a distance into a thirsty mouth, and which are such a snare to the unaccustomed wayfarer. The old woman who was mistress of ceremonies hunted about behind the counter of the tiny store which was an adjunct to the inn and found a fly-specked letter-head.

"Thou shalt have this," said she. "It will serve to save us from forgetfulness."

All the way to Andorra I had cherished a secret hope that I might be permitted to accompany the smugglers on one of their illicit trips; but when I

reached the capital this vain hope was blighted. It was not that there was the slightest suspicion of a stranger, or that the march over the hills was considered too difficult for tender feet; but the Andorrans felt they must consider the state of the stranger if he were discovered in France without a proper visé on his passport. It was felt that he might have the greatest trouble to explain himself, and that in the explanation an official and undesirable attention might be directed toward themselves; so I was regretfully refused.

But the operations of the smugglers were made quite clear to me. In these Pyrenean hills a tobacco is raised by which the rankest Connecticut second growth might class as Havana. This frightful stuff is labeled in accordance with the tastes of the prospective victim. One may have a Havana cigar, or one ticketed from the Canary Islands, or marked Carolina or Virginia or Gibraltar. Even the revenue stamps are counterfeited, so that, so far as externals are concerned, the elect would surely be deceived. But an outraged palate would discover the deception.

In the tobacco factory of Andorra these cigars and cigarettes are put up in packages, and packed in haversacks which are just a load for one man. If the smugglers run a haversack through to France they are paid eighty pesetas. If they are forced to abandon the load en route they are still paid twenty pesetas. The packages of cigarettes which one buys for twenty centimes in Andorra sell, according to the stamp upon the package, for eighty centimes outside; so that the smuggling profit is not to be despised. But the most profitable trade is in mules.

CHIEF TRAFFIC IS IN SPANISH MULES

Spain has been fairly robbed of her mules by the needs of the Allied armies, and so the further exportation is frowned upon by the government. Likewise, although these mules are bought for the French army, France still maintains an import duty upon live stock. The Andorrans procure mules by hook and crook from Spain, and lead them over the hills at night by unfrequented paths into France. The share of the gendarmes in

this traffic, as previously stated, is ten dollars a mule. There is no record that an Andorran smuggler has been recently injured in the practice of his vocation.

There is a prosaic stability about the business of smuggling in Andorra that detracts from its interest to the visitor. I turned my attention to the study of history in Andorra, but here I was somewhat disappointed. It was possible to get into the old council hall, in which the horses of the councilors are stabled on the ground floor, while the council hall and their sleeping quarters are on the floor above. There is a fine old fireplace there, in which the administrative meat is roasted, and a cupboard with six locks, in which archives are kept that date from the days of Charlemagne.

But each canton has a key, and the keepers of the keys were on the hills, smuggling or watching the cattle that furnish the most permanent source of income here; so that my inquiry into Andorra's past was a somewhat scanty one.

TITLES ONCE OBTAINED ARE NEVER RELINQUISHED

The total population of the republic is about 6,000, and those men that have arms serve in the army. There are no uniforms in the army, but this shortage is made up by the surplusage of officers.

Artemus Ward's regiment of brigadier generals might well have had its inspiration here. The man who once gets an office never relinquishes the title, and as offices seem to go somewhat by rotation, the untitled man in Andorra must be a poor stick indeed. Nor is there a finicky precision in the matter of arms for the army. The man who served lunch showed me with pride a blunderbuss made by Tower, in London, in the days of one of the first Georges, and assured me that he was a soldier in good standing. It was a good blunderbuss, too—clean as a watch and obviously up to anything. I did not wonder at the pride he took in it.

"It is a hard country," said the priest who shared the mule cart on the way back to Seo. "The cattle begin to straggle down from the hills when the snow falls early in September. The winter is long and very cold and my people are so poor. But for the smuggling they would suffer. What would you?"

PLAIN TALES FROM THE TRENCHES

As Told Over the Tea Table in Blighty—A Soldiers' "Home" in Paris

BY CAROL K. COREY

AUTHOR OF "FROM THE TRENCHES TO VERSAILLES," ETC.

ALL the long tables are ready for tea. The cloths are blue and white and so are the dishes. The milk pitchers are full to running over, the jam bowls too, and the large plates of fresh, sweet-smelling bread and butter are just where they ought to be. And there's cake—the good kind, full of raisins and currants and nuts. Why, there's even plenty of *sugar*! So, as I tie on my absurd little apron I say to myself that it doesn't look like a war-time tea at all.

But it is, in the fullest sense of the word; for in this big, cheerful, sunny room every guest will be in uniform. He may be a "Tommy," a "Canuck," or a "Scotty." If he's a New Zealander he'll call himself a "Pig Islander," and if he's Australian he's an "Aussie" for short. If he's French Canadian we never ask his name—just call him "Pierre," at which he smiles and shows his nice white teeth.

Never mind, he's a soldier on leave, else he wouldn't be in "A Little Corner of Blighty." Everybody knows that "Blighty" is just another name for Memory, or Courage, or Strength. Briefly, it's *home*, the beginning and end of the soldier's long, hard trail.

The first three to come to my table are "Kangaroos"—tall and straight, freshly shaven, uniforms brushed and pressed, boots of a dazzling brilliance; happy faces, happy laughter, happy hearts. "By these signs ye shall know them," for they are "just in."

"JUST IN" AND WHAT IT MEANS

To be "just in" means everything for which you have longed during twelve, fourteen, sometimes even nineteen or twenty months. It means *Paris*, with money in your pocket. It means free-

dom from discipline. It means *sleep in the morning*. If your pal's sharing your room, the last thing you say to him at night is, "Call me at six," just so you can tell him to "Go to," etc. Then you turn over again.

Often a glistening new alarm-clock is carried in, hilariously wound, and curiously set for some unholy hour. And when it attempts to fulfill that mission for which all alarm-clocks were invented, it is sleepily but vigorously kicked into space to an accompaniment of "That sure was worth the price." It's nice to be "just in."

Before very long the three have learned the name of the best theater in town, and that of the finest and most expensive restaurant. The smiling one asks if the circus is still on, and when informed that it is he immediately decides for the other two:

"We'll go there tonight, though we're all pretty tired from the long ride down, and I suppose we *ought* to go to bed, inasmuch as we've got eight full days here. Indulgence leave, you know, only for good boys. And the best part of it all is that we're together. Two more 'birds' from our 'divvy' came to town day before yesterday, and we're all going to meet here. We've heard a lot about this little village and now we're going to prove it. Wright, here, didn't want to come to tea at all. Said he wanted to look 'em over. My word! The girlies are scrumptious in this old town. I'm saying to myself as I listen to your talk, dear friend, 'don't move; she might vanish'; for we haven't heard a lady speak English in seventeen months.

"Last night we saw a girl; she was plowing, and I don't mind telling you she got us going, at that. Wright hung out of

the car window and gave a good old Australian 'cooee.' But she just shook her head 'cause she didn't 'compreee.'"

BARTY'S REQUIEM

Just here a fourth man wearing the same divisional colors on his sleeve joins our group to the gay shout of "Hello, Digger," which is only another name for "mate," you know.

Then: "Where's Barty? Didn't he come along with you?"

The newcomer shakes his head, and when he is asked "Why not?" answers simply, "Dead." To a further question of "When?" he replies, "Monday." And Barty's only requiem from three husky throats is, "He was a good bloke."

As I say "Hello!" to three New Zealanders, I see that something is very wrong with them, for they fairly radiate gloom—so much so that the smiling Australian, who has just lighted a "fag," again takes the floor. He wants us all to "gaze on this procession of joy-killers." And he goes on like this:

"Say, fellows, this is 'Paris.' Don't you know that? And don't you know you're damn lucky to be alive?"

"That's no news to us," says one of the newcomers, a stretcher-bearer. "But on the last afternoon, when in spite of ourselves we feel a little down, we come in here and a lady begins to sing 'End of a Perfect Day.'"

When I look at these three nice boys facing no one knows what, in spite of all talk about "encouraging the morale of the men," I can't help saying:

"If you happened to steal another day, you wouldn't be the first."

The big-eyed one, who is a bomb-thrower, shakes his head mournfully as he tells me it can't be done, for "We've got to think of the other fellows who are waiting their turn. Anyway, it's a terrible risk."

THE UNBELIEVABLY PERFECT GIFT

And when I ask if the risk isn't worth the result, everybody present acknowledges vociferously that it is, but—at which the third kid, who up to now has eaten steadily and said nothing, breaks into the conversation with "Oh, hell, lady, we're three days overdue now!"

Some one touches me on the shoulder and I turn to greet a serious, anxious-looking soldier with whom I have a great secret. His first words are:

"Did you get it?"

And in a stage whisper I answer, "Yes."

Then he asks, "Is she pretty?"

And I say:

"Wonderful—really, truly curls and a white lace dress, and all the little underthings hand-made, with ribbon bows everywhere. And she can be dressed and undressed a hundred times a day, because there are regular grown-up 'snaps' on everything. Even her hat's got a hat-pin and she's wearing gloves. And she says, 'Mamma' and"—

Here I am interrupted with, "Can she say *papa*?" And I swear it.

Having kept the best till last, I tell him that she *walks*. All you have to do is to turn a little thing in her back and she starts. She's so cunning I almost want to keep her for myself, though I shudder when I think about the price.

"Price," scorns he, "do you think I care a hang about the price? Please remember that child o' mine is four years old now, and when I saw her she was exactly seven months. Don't you suppose I want her to know she's got a daddy?"

I take advantage of the lull in the rush of serving, and sneak him through the kitchen, where no soldier is allowed, into the room where we hang our coats. The chief tea-maker begins to expostulate, then recognizes my companion and only smiles; for she, too, has seen Miss Dolly. I allow daddy to open the box. As he lifts from the many sheets of pink tissue paper this unbelievably perfect gift he only gasps, "Oooooohhhhhh," but I am repaid.

"WAR'S A GOOD THING FOR A LOT OF US"

I return to the tea-room to find a hot-headed chap storming indignantly:

"There you go again, talking about the war. There ought to be a law!"

"That's so," interpolates his neighbor. "What else do we know after three years of it? You pick a nice, new, interesting subject and tell us about it. Why not give us a little lecture on the *mud*? That's always interesting to the ladies.



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WHAT BLIGHTY MEANS TO OUR BOYS

The sailors on leave from their ships and the soldiers from the trenches bring to the city their high-hearted, indomitable youth and the motto, "This is Paris, and we're lucky to be alive."

They say 'Poor dear' so sweetly that you forget to tell them the one good thing about it, which is that it keeps you warm. I never had a cold till I got here and cleaned it off. And look what a 'beaut' I've got now. I tell you, Missus, the mud's never hurt me. Neither has the war. Why, I used to have asthma somethin' fierce; but now it's all 'partee.' If we get home with all our arms and legs

and eyes—or just enough to get on with—this here war's goin' to be a good thing for a lot of us.

"Of course, I ain't sayin' it's pleasant; far from it. There's the route marches and the everlastin' salutin' and the bully beef and the bumps on the ground at night. But there's compensations. Take my case. I had *three* sisters all learning the piano at once, and all of 'em dube-

at it. Yeah, it could be worse. Pass the cake, Kid."

Two more Australians, whom I know only as Phil and Steve, are ready for tea. As I pour, I ask the big one, "What's that you're wearing in your hat?"

To which he replies unsmilingly, "Kangaroo feathers, of course."

And when I want to know what his friend carries that enormous knife for in his belt, he unhesitatingly answers, "Appendicitis."

"Say, this is a boshter (fine) place, eh Phil?" says the red-haired one.

Phil nods in hearty assent, though his mouth is truly too full for utterance. After a little while, however, he slows up, and begins to tell me about some of the fun they've been having. The best evening was the one on which they began by beating up a taxi driver because he refused to take them five miles into the country.

"By thunder, lady, that bloomin' blighter was a funny sight, wasn't he, Steve?"

THE AUSTRALIANS DINNER PARTY

Steve says, "Righto, especially when his nose bled the most."

The aunt of another pal, having discovered their presence in Paris, invited them to dinner. They left their hotel "perfectly good citizens, at peace with all the world." After they'd finished with the chauffeur they got into his car, pulled down their sleeves, leaned back, and "lighted up." Arrived close to their destination they stopped the taxi, got out, overwhelmed the frightened and bloody driver by the size of the tip, and then proceeded the rest of the way on foot, 'cause they "had the wind up" at the thought of eating with a lady.

"You tell the rest, Pete," says Phil shyly.

But Pete insists that he "hasn't brought his music," so Phil continues:

"You see, we really wanted to meet Sam's aunty, and we really wanted to eat that dinner, but the nearer we got to her house the scairder we got. We went past three times, and once Pete had his foot on the lowest step; but we got seasick again and hurried away. Fourth time, just as I said, 'Let's smoke one more be-

fore going in,' the door opened and a little, round lady, with nice twinkly eyes, came out and said: 'This is the house, boys. Come right in. Dinner's almost ready.'

"So we did, and first thing you know, Pete here was having a fine time, like he always does. We both spied a big photograph of Sydney harbor on the wall, and that gave Pete something else to talk about. As for me, well, I just couldn't think of a word to say, and I got to worrying about what the lady must be thinking of me. Poor soul! She married a 'Froggie,' but at that she *seems* happy.

"When the time came to go in to dinner, a lady servant with awful nice feet looked in at the door and said: '*Madum, eh surry.*' She looked right at *me*, too, and though I didn't savvy, I winked back. But nothing happened. Aunty just said, 'Mercy' (Merci), and we all 'fell in.'

"Mr. Froggie was very nice and very polite—very. Always saying 'Pardong' and making funny little bows. But I liked him at that; for of course he can't help his ways, now, can he? He told us that Madum was delighted to have us in 'cause she'd never gotten over being Australian. Everything to eat was going to be Australian, not a single sauce on nothin'.

"When we got into the mess-room, first thing I noticed was a treemennjus bowl of Australian wattle blossoms."

"You're crazy," bursts in Pete. "It was French mimosa."

"MY NAME'S THE GUSHER, BUT TONIGHT I CAN'T SAY A WORD"

"Oh it was, was it?" shouts Phil. "You call it by any new-fangled French name you want to. It'll always be plain old golden wattle to me. As I said before, there was a huge bunch of *wattle* blossoms on the table. I gave one look and sniffled right out loud. I just couldn't stand it a bit longer; so I said: 'Mrs. Australia'—I called her that for, in the first place, I could never pronounce her Froggie name, and in the second place, I think 'Mrs. Australia's' *mighty* pretty, so I said, 'Mrs. Australia—most of us have got a nickname in the army. Mine's the 'Gusher,' 'cause I talk so much. But tonight I can't talk at all. I'm thinking of



Photograph by William Brandt

THE STRASSBURG MONUMENT

Today, the Strassburg monument is more than a memorial to Alsace, more than an expression of the proud spirit of France. No longer draped in mourning, but bright with the tri-color, it is a declaration that might does not make right.

home and I can't say a word—not a word.'

"Well, she just leaned over, patted me on the shoulder, and said: 'Then, why try?' She's dinkum (the real thing), she is—dinkum as they make 'em."

A Scotty takes a vacant chair and I go to the kitchen for fresh tea. As I pour it I see that it is unusually strong, and offer to bring hot water. But no; he wants it strong, very. I say: "My good-

ness, I should think you'd be too nervous to fight."

And most seriously he answers, "Bee-leave me, sister, *I am*."

A solemn-looking boy, who hasn't said a word during all his tea, gets up, thanks me, and goes away. At which two of the others burst into hearty laughter as they inform me that "the poor boob is upset because he can't forget the face of the Fritz he 'finished.'"

"LET'S NOT TALK SHOP"

Everybody at the table concludes that "he'd better wait until he's got something to worry about." But, upon questioning, most of them admit that sometimes the things one sees are not exactly pretty.

"For example," says one, "that time the 'big one' came just when sixty of us were coming out after 'fourteen days of it.'"

At which an elderly man speaks up:

"The saddest sight ever I saw was this morning, in Notre Dame. A nun came in with forty-eight children all in black. She told me that every one had been orphaned by the war.

"But, let's not talk shop. Let's talk about the funny things one sees. Once I was driving in a long line of transport lorries. Suddenly, it seemed almost before I heard the shell, I saw an overcoat sailing through the air. The sleeves were waving wildly and I laughed till I cried. I ran up to it and saw there was something inside; but I kept right on laughing. When I got back to my car I met a mate, who said: 'Say, I got a fine pair o' legs here. You know who owns what goes with 'em?'"

A disheveled boy, sinking exhaustedly into a chair, exclaims:

"Geeminy crickets, I'm tired. Paree or no Paree, I'm going to bed right after tea. My back aches and I'm full of bruises."

"Too bad," I say, "just in from line, I suppose."

"Line nothing," he sneers. "I've been learning to roller-skate."

As I fill his cup for the second time, a nice "homey" sort of a lad wants to know "where all the pretty workers come from." He goes on:

CHOCOLATES ALL GONE—TIME FOR THE WAR TO END

"Now that little one in black, with all the yellow hair, will do me. She told me yesterday that after the twentieth of the month you won't be able to find a *single* chocolate in all Paris. Think of that, fellows! Just about time for this nasty war to end, don't you think? This place is certainly top hole, and I wrote in the visitors' book how I felt about it. What did I write? Just 'Better than a married life.'"

"Proving, of course, that you are not married," I say.

"Proving, of course, that *I am*," says he.

After a minute I'm asked if I've seen Mack today.

"He promised to meet me at the corner of the Roo Day Rivullay and the Roo Fourth Day September, and I waited till my feet got sore. I say—here he is now. If you don't mind *too* much, Mack, I'd like to know"—

"Yes," fumes Mack, "all I had to do was to *find* that corner. After I'd hunted for it most of the afternoon I asked a Frenchy. He began with the first verse, which he did solo. When he got to the second quite a crowd had collected. So I said: 'I'm a peaceable man myself. Have it your way.' And here I am."

"Mack" seems a good sort and tells me he likes music. From the wide, soft, many-plaited band around his hat I know that he likes "swank," too. Also he likes books and asks me if I've read the story of Gallipoli, just published by an Australian. He goes on to relate that his mother has sent him a copy, but that it's "no bone" (*pas bon*), for the author contends that every Australian is a hero.

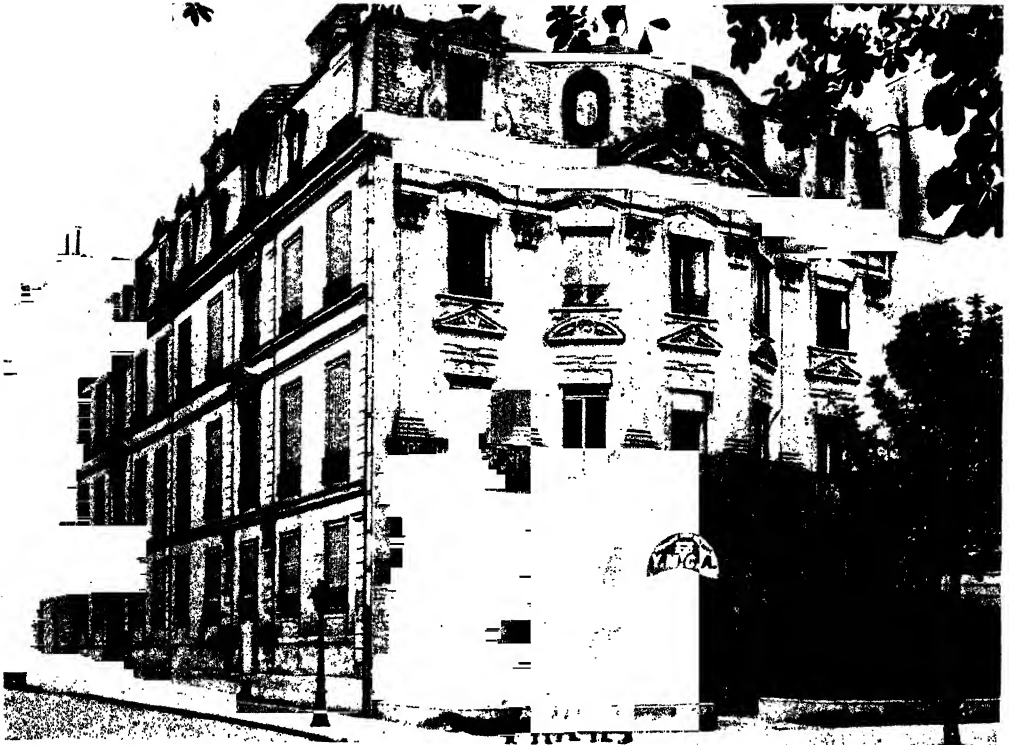
During the shouts of derision which follow this statement I defiantly announce that every Australian *is* a hero. At which five modest youngsters rise, make me a gallant bow, and exclaim as with one voice, "We nevah contradict a lady."

"I KNOW IRISH EYES WHEN I SEE THEM"

After they have gone there is sufficient time to permit me to clear my table and prepare it for the next "reinforcements." I slip over to another part of the room, where three "workers" are intently listening to a fourth, who is narrating something thrilling, beginning: "And *he* said"—But I shall never know what he said, for a glance over my shoulder shows me that again every seat at my table is occupied. So I hurry back.

"Why, you're all Canadians this time, aren't you? That's nice," I say, as I busy myself about my pleasant task.

"Easy, easy, lady," says a mischievous-looking baby. "I'll venture to say you smiled just like that at your last tableful,



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Y. M. C. A. BARRACKS FOR AMERICAN FIGHTERS IN PARIS

Here is a home for the soldier "just in," where he can realize the dreams of months at the front and enjoy freedom from discipline, hot baths, and *sleep in the morning!* "Freshly shaven, uniforms brushed and pressed, boots of a dazzling brilliance, happy faces, happy laughter, happy hearts"—by these signs ye shall know those who are "just in."

and that there wasn't a Canuck amongst them. You see, I know Irish eyes when I see them."

I don't answer because my attention is fixed on a rough-looking individual who is making a violent arraignment against America and all things American. He is saying:

AN ATTACK ON FOOLISH AMERICAN BOYS

"They make me sick with their talk about their umpteen million men and their steen billion airplanes. And they send a handful of toy soldiers to France, and these guys sit in cafés and tell about how, since we couldn't finish the war ourselves, they've come over to do it for us, and that if they can't *win* Belgium back they'll *buy* it back, and that if their fathers' incomes could be added together it 'ud make something like"—

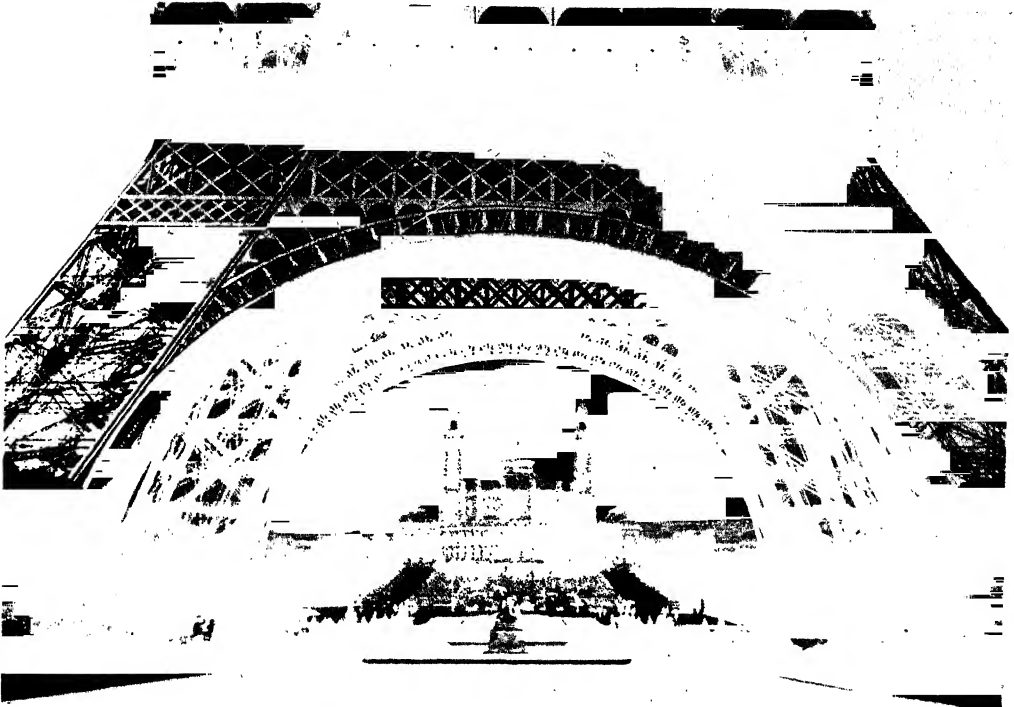
Here I can stand no more. "But surely you don't hold a whole nation responsible for the talk of a few foolish boys?" I demand as calmly as possible.

Furious at being interrupted, he wants to know why it's my funeral to "stick up for the rotten Yanks."

And when I reply, "Because I happen to be one myself," he only whispers, "Well, I'll be double damned."

As he goes out, however, he stops for a second to hiss into the ear of the first speaker, "*You and your Irish eyes!*"

An alert, middle-aged man is on my right, seated between two clear-eyed, up-standing boys. He introduces me, oh how proudly, to what he terms his "off-springs." All three are in the same regiment, and Eddie is twenty-one—celebrated his birthday day before yesterday, right here in Paris. What do you know



Photograph from W. W. Rock

THE PALACE OF THE TROCADERO, SEEN THROUGH THE ARCHES OF EIFFEL TOWER

The art treasures of Paris are clustered like jewels in a setting, and one need only turn from masterpiece to masterpiece. On the dome of the Palace of the Trocadero, seen in the distance, is poised Mercier's "Fame." In the beautiful park, which slopes down to the Seine and the Bridge of Jena, are several fine statues in marble and bronze, and one wing of the palace is occupied by a remarkable collection of sculpture, chronologically arranged for comparative study, with representative casts from the twelfth century forward.

about that? Freddie is nineteen and trying to raise a moustache. And isn't it wonderful to have leave together?

Freddie tells me it wouldn't have been possible except that father said he didn't mind; he'd postpone *his* leave till the kids got theirs. Which makes Eddie join in with:

"But you can always count on father. When you need him, he's *there*. Why, when Freddie got plugged in the leg"—

But father says, "Don't bother about that now, son."

And when I tell father what a splendid thing it is to see three such fine soldiers from one family, he only smiles, but he seems pleased. He explains that "his partner at home has a weak heart, but manages to keep the business going, so there was no reason why *he* shouldn't

have come. And as for the boys, well, *look at 'em!*"

A BIRTHDAY DINNER, "JUST LIKE A BOOK"

Father himself, so he insists, is hard as nails and can stand the grind better than "either of these brats here." Then all three begin a recital of the interesting things they've done, and when I tell them of several places they haven't visited yet, Freddie marks them down in a little red book.

Then Eddie, with great enthusiasm, starts the story of the birthday dinner. How, not knowing one word of French, they couldn't make the waiter understand that they wanted oysters. When they'd pretty nearly given it up as a bad job, Freddie ran out into the street, returning with an oyster shell taken from a



Photograph by G. Frederick Atherton

A VIEW OF THE SEINE

The river has wound its silver thread through the stately, dramatic, and violent years of Parisian history, but never through a chapter more poignant or exalted than the present, when France has become for all civilization the symbol of heroic sacrifice.

great stack on the sidewalk. *Wasn't* he clever?

And father ordered *two* kinds of fish, though, of course, he hadn't meant to. And the only way they got nuts for dessert was by imitating a nut-cracker with their hands. Even the waiter laughed, and the proprietor gave each of them a post-card, with a picture of the restaurant on it, to remember him by. Wasn't it *just* like a book?

And every night, no matter how tired, they wrote a joint letter to mother.

"MOTHER'S THE BEST SPORT IN THE FAMILY"

Freddie told her what they'd done from breakfast to lunch, Eddie how they'd filled in the time from lunch to dinner, and father how they'd passed the evening. So mother wouldn't think she was forgotten for a minute. I guess not. Why, every morning since they'd left her, soon as their eyes popped open, first thing they all did was to pull out her "pic," salute, and say, "Good morning, little mother."

And guess where they carried her?

In their caps, of course. Easy to get at, you know.

"Gee! if she could only be along to-night! Going to *grand opera*! And the seats cost *something*—fifteen francs apiece, if you please. But, shucks, mother wouldn't mind. Why, mother's the best sport in the family." I agree to that.

As I pass the bread to a newcomer I recognize an acquaintance of yesterday. In answer to the usual question, "How long have *you* got?" he had informed me with a knowing wink and a dig in the ribs that he might be here a "considerable" time; for he is private chauffeur to the colonel and "the colonel's got his lady." He slips me a little bunch of violets under the table because I "was so good to him yesterday," but he'd like to know why I took so much trouble to direct him to the "booleyvard"? He grins as he asks:

"Why didn't you just tell me to walk till I smelled the perfume? I found it all right and it cost me a pretty penny, too. Say, I'll bet a guy could spend a thousand francs a day in this town and lead a righteous life. And if he lived the other kind"—

Grand chorus, "Ladies present."

A jolly, fat little soldier bounces into the room, throws his cap on the floor, and beams all around, as he fairly explodes: "*Oh, what a beautiful Thursday!*"

THE STORY OF A BATH

In answer to my unspoken question he explains that every day in the trenches is "like Sunday on the farm," whereas *here*—why, one actually remembers the day of the week. He knows that this is Thursday, for he got in on Saturday night, and getting in on Saturday was the luckiest thing that ever happened to *him*, because that's one of the two days when there's hot water in Paris.

"So," he says, "I turned it on and I stuck my head in the steam, and I filled the tub so full that when I dived into it I splashed all over the place. I hopped out and wiped it up as best I could—anyway, I had *another* towel. Then I slid back with a happy sigh into that beautiful boiling bath, and I soaked—just soaked.

"Some one knocked at the door, and it was the maid; but I said, 'Not at home. Won't *be* at home for quite some time.'

"You see, I can 'parler' a little; so I 'got her' when she said she'd come to prepare my bath.

"I said, 'What? I guess I don't need no lady to prepare no bath for me.' She seemed kinda surprised, and I heard her mumbling to herself, and I wondered what she was doing in my room so long.

"By and by, though, after 'bout an hour, I had a dandy rub-down with a towel that smelled *clean*, for I don't mind telling you that I'm in a real, regular hotel, with elevators and everything. Then I went into the other room and I seen what Maddymoizelle had been up to. I laughed out loud, 'cause she'd drawn the curtains tight—against Zeps, you know. She'd turned down the covers of the bed, all *pink*, and she'd lighted a little lamp, which was pink too.

"I says to myself: 'Curley, this is *y-o-u*, which spells *you*.' And I never was so happy since I got my first pay envelope. I wiggled into that bed slow and careful, so's not to disturb things too much, and of course I hadn't nothin' on. Catch

me missin' the feel of them sheets. And I've got *five* more nights."

WHEN HE LICKED THE SPOON

I hand the jam to a fellow who wants to know if I've ever seen the Bairnsfather cartoon where poor Tommy, opening another tin of apple jelly, is saying longingly, "*When'll it be strawberry?*"

I nod, but tell him not to be afraid of this brand, because it was made by one of the ladies. So he decides to "take a chance." I notice that his "chance" is a liberal one. As he scrapes the bowl he volunteers the information that his mother always used to let him lick the spoon. At which everybody present yells, "Kamarad," including me.

I go to the kitchen for a fresh supply, and when I get back there is a great discussion about last night's air raid. A thin, nervous, jumpy little man is saying that he reached his room at 8 o'clock, straight from "Hell Fire Corner," and, dead weary, had fallen into bed; but the strange feeling of a mattress under him and four walls around him had chased away all thought of sleep; so he turned and twisted from 9 o'clock until the first bomb fell, at 11.25.

"Then," he concludes, "it was just like 'Home, Sweet Home' in my pill-box, and I woke up this morning at 8."

The two latest arrivals are old friends of mine. I've known them for a week and two days. Today, I'm not so glad to see them, for it's their night to "deed-partee," and I hate to say goodby; but they are not *too* sad, as they put it, and the blue-eyed one immediately begins a description of an afternoon spent in the "Looksumburg," and finishes up with, "Gawd knows I've seen enough of art."

ONLY TWO SPEEDS TO FRENCH TRAINS: SLOW AND FULL STOP

The brown-eyed one declares, "It'll be good to get back to the 'mokes' (horses)—anyway. The worst thing about the whole business is the railroad ride back, because in France there are only two speeds for a train, to wit: slow and full stop."

We chatter on about many things until the time comes for me to wish them the



THE PLACE VENDÔME, PARIS

The column was erected to the "Glory of the Grand Army by Napoleon the Great." Bronze from 1,200 cannon taken from the enemy in the campaign of 1805 was used in the spiral band, which depicts scenes of that campaign. Pulled down by the Communards, the column was recast from the old molds and re-erected in 1875.

usual "Good luck!" The blue-eyed one begs me not to worry about him, for "Fritzie hasn't made the shell marked with *his* number"; and the brown-eyed one tells me not to worry about *him*, for he's going to try to live up to the rules. I know he means the rules of the Y. M. C. A., which are: "Live clean; be clean; fight clean; play the game."

We shake hands in true soldier fashion, and I wince as the ring on my finger presses into the flesh.

The blue-eyed one lights a "Players" and goes out whistling, "I know that she'll be waiting, as she promised she would do."

But the brown-eyed one seems to be thinking aloud, as I hear him say, "We who are about to die, salute you."

When I attempt to fill the cups of three new ones, I am stopped by an imperious gesture and a sharp command to bring "three whiskies, quick."

"Oh!" I say, trying not to laugh, "we only serve tea here, you know." And to a most indignant, "Talk about your *rotten* places," they stagger out.

A SUBMARINE SURVIVOR'S FIRST SPEECH

A white-faced, delicate boy in civilian clothes, with a handkerchief around his neck in place of a collar, his ill-fitting coat much too small, and his painfully new shoes squeaking as he walks to the center of the room, begins to speak:

"Hi in't never mide no speech before. Hi in't," he commences in truest Cockney accent. "But hi hintend to mike one now, hi do. Ili and me mites was submarined the other dy. It's the fyshion to be submarined nowadays; so you see we hare very fashionable. Ha, ha! We swimmied a good piece, we did. We got picked up off the coast o' Barcelona, where we wuz took in by kind people. The consul give us these nice clothes to wear. 'E was a good cove, 'e wuz. 'E give us our train fare tom'ere; and I want to say that I never was treated better nowhere than I been treated right 'ere in this 'ere place, and I want to give three cheers for the ladies in Blighty, and—and—well—Gawd sive the King!"

I know it is getting late, for the "reg-

ulars" are beginning to come in. One drags a leg, another trembles constantly, a third has a hacking cough—gassed, you know; but, "once you're in this game, you just naturally got to stay for the finish." Consequently, though for these three the war is over, they are still in uniform.

The first drives a motor transport, which meets the 'on leave' men at the trains, the second's a batman, and the third is in the army post-office. As their wages are not exactly high, the teas in Blighty help out considerably.

The coughing one comes to my table and immediately begins a monologue. He gives us all the news of the day, interlarded with much home-made poetry. He goes on at such a rate that I have to assure the others that he is perfectly harmless, "it isn't shell-shock at all."

"TEA IS SO WEAK IT'S LIKE KISSING
SISTER"

According to him, the tea is so weak today that to drink it is like kissing your sister. And he wishes to know if we've seen the startling news in all the papers, that Charlie Chaplin is in first line. This announcement falls like a 5.9 and creates a wild storm of abusive contradiction. Above the din I am able to make out:

"I guess that *that* would be a little *too* much. If the Allies want to end this war quick, just let 'em put Charlie's feet in danger. Why, Fritzie could make his own terms and no one 'ud give a tinkers." That's what it means to be a hero of the screen.

The room is nearly empty now and almost quiet. I've about decided to leave when a gaunt, cadaverous person slouches in. Apologetically he asks if he is too late for tea. Because he looks so wretched, I reply in the negative, just as he notices the signs, "No tea served after 6.45." He smiles gratefully at me, with a smile that changes all his face. We are silent for a few minutes, partly because I'm a little tired, I guess, and partly because I feel a bit timid before this most unusual type of visitor. Suddenly, without a word of warning, he informs me:

"You're right. I *am* a rough customer. I'm just out of clink" (jail).

I say, "Ha, ha! Caught with a camera, eh?"

"Worse than that," says he.

So I guess again: "You took all the temper out of your tin hat when you cooked eggs in it."

But he finds no humor in that ancient joke. When I state positively, "You're not the sort for an S. I. W.," he murmurs sadly:

"No; it takes nerve to go in for a 'self-inflicted wound.'"

His face is pinched and drawn, though almost triumphant, as he finally admits his offense: "I hit an officer."

In spite of myself I gasp a little, for this is serious business; but I say nothing, for he has started a very flood of talk.

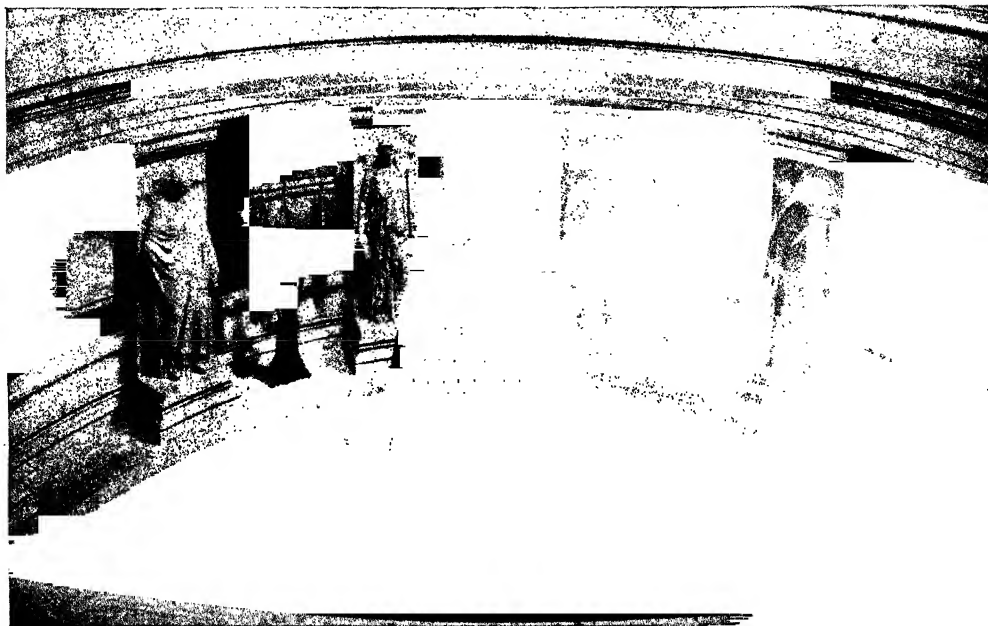
THE FIRST VOLUNTEER FOR HIS TOWN

"I was the first volunteer from my town," he tells me, "because then I thought the war was right. My three brothers came, too. One is blind and two are dead. The littlest one was the prettiest boy I ever saw—absolutely the prettiest. I found him right after they 'got' him, and he looked as though he'd just come from a party. His face hadn't been hit at all, and not a hair was out of place. I helped to bury him; then I sent the cable home. I'm forty years old, and all my life I've had men under me. My father owned a big horse ranch, where I learned how to treat men. And when that young, impudent whipper-snapper dared"—

"Yes, yes," I break in. "I know, but"—

"You know," laughs he. "You know *nothing*. You get up in the morning, in a steam-heated room, and you look out of the window. If it happens to be drizzling, you say to yourself, 'My, my, to-day I'll get my little boot soles wet.' When you've had to leave a mate to die in the mud, standing up, because you have only sufficient strength to pull your own legs out, then you know something about war and its glories. Oh, but it's cruel, that mud of the Somme! And that night, when I'd worked in it, slept in it, and swallowed a lot of it in my rations for ten days, that insufferable cad, that unmentionably odious tuppenny ha'penny captain"—

"Can't you forget it for a little while now? Your tea will be stone cold. Be-



THE TOMB OF NAPOLEON

No soldier on leave from the trenches ever visits Paris without at some time visiting this matchless monument, reared by the French in memory of the foremost captain in the history of military science.

sides, one of these days we're all going home," I say desperately.

"Maybe so," he sighs. "But somehow, after more than three years, we sort of stop counting on it. You see I sailed from Sydney on what should have been my wedding day. I'd been engaged a long, long time, but wouldn't marry, for I'd bought a bit of land and wanted to be out of debt first. For exactly a year I lived alone in a hut. I was my own cook, and I tell you frankly I was low and dirty; but each month I knew I was getting a little closer to the end, because each month I was able to buy another cow or two. And there wasn't a happier cuss in the land.

"NEVER FEAR FOR ME; GOD HELPING ME,
I'LL CARRY ON"

"Then—well, the war came. So I leased the place to a dirty slacker, and the next week the government gave him a contract for his whole output of milk and he's getting rich. As for me, all I ever asked of life was peace and quiet. Would you like to know how I've spent most of my

leave in Paris? On a bench in a park watching the kiddies at play. If I could just wake up in my room, with the comfortable old furniture and with all my things in a drawer!

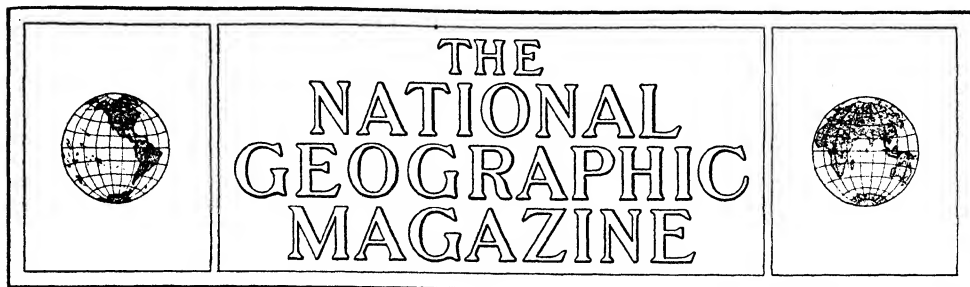
"If anything at all were to be gained by my being killed, don't you think I'd submit to it gladly? But what's the good of it? All my old friends are gone, and new ones come and are mowed down, and the war goes on, and each day some big brain evolves a cleverer and more ghastly way to do the slaughtering!"

"The little Padre is singing again," I softly venture. "Listen:

"When I get home at eventide,
God will remember and provide."

My poor tired fighter gulps a little over the last mouthful, rises, and, looking down at me from his great height, says very simply, "Never fear for me, madam; God helping me, I'll carry on."

And as I remove the last of the dishes and the half-faded flowers; as I scrape up the crumbs and fold the cloth, I keep thinking, "That's right. God helping us, we'll all carry on."



COOTIES AND COURAGE

BY HERBERT COREY

AUTHOR OF "THE MONASTIR ROAD," "SHOPPING ABROAD FOR OUR ARMY IN FRANCE,"
"A UNIQUE REPUBLIC," ETC.

The "cootie" is not a pleasant topic to write, talk, or think about; but the seriousness of this menace to the health and comfort of our soldiers—a menace which scientists are exerting every effort to minimize—warrants the publication of Mr. Corey's unexaggerated account of the chief pest of all fighting men.

LAST night I heard laughter as I stumbled along a dark street in a dark village in northern France. I say "dark," but the word does not properly set forth the conditions. There was no moon and there were no stars. It had been raining and in a few minutes it would be raining again. The street had once been paved—about the time of the Roman occupation, perhaps—and a few rounded cobbles were still imbedded in a soggy mud that sucked at one's boot-soles as one walked.

No light came from the windows. One knew that inside the houses American soldiers were gathered about the candles, reading or "shooting craps," or wondering why the Y. M. C. A. was not performing total impossibilities in getting its chocolate-and-cigarette-laden trucks over roads that were gummed and cluttered with the camions of an army in movement.

The windows were curtained, so that not the slightest gleam escaped. In this part of France the peasants favor solid wooden shutters outside the windows, and inside the soldiers had tacked up blankets. Hostile airplanes are always on the hunt for villages in which soldiers

may be bombed. This particular hamlet was within range of the Germans' big guns and no chances might be taken.

WHEN AN AMERICAN "OUTFIT" ENTERS A TOWN

Only those who have been lost in the midst of a forest on a rainy night can properly appreciate the utter blackness of that street. I ran head-on into a soldier. "Visibility low," he remarked, in grimly humorous quotation from the report often made by the aerial observers.

The laughter came from the one room in which the officers of the headquarters company were bedded. I knew that room. In it the beds were laid so thickly on the rough brick floor that they overlapped like shingles on a roof. Only the man who slept next the door could get to his bed without walking over the beds of the other men. All others walked over his bed in going and coming. They were distinguished from each other by the names of the owners chalked on the dingy wall.

When an American "outfit" enters a town in which it has been newly billeted, it finds that the billeting officers have preceded it. Upon the doors of houses



Photograph by Herbert Corey

A TYPE OF DELOUSING MACHINE NOW IN USE FOR CLEANSING THE CLOTHING OF OUR AMERICAN TROOPS SUFFERING FROM THE COOTIE PEST

The cootie is a hardy insect; it takes boiling water to kill it and prevent its eggs from hatching. But hot baths and sanitary laundries are rare luxuries in northern France and these big tanks are a necessary part of the equipment of the American Expeditionary Forces.

or the gates of courts such legends as this are written:

"Company I, one officer and 12 men."

Inside that house or that court or that barn an officer and 12 men of Company I are free to find such accommodations as they may.

Sometimes the officer sleeps between sheets and sometimes the men roll in their blankets on clean, sweet-smelling hay. Sometimes the lodgings are more primitive. Not long ago I visited a major whose bed was only divided from the bed of the household pig by a board partition, ventilated by huge cracks. Another officer shared a room with a sick cow. In another house the chickens and the men roosted together. No one complained; for this is war.

It was in burlesque of these chalked billeting orders that on the walls of the bedroom of the headquarters company had been written the names of the bed owners.

THE TYPE OF AMERICAN OFFICER IN FRANCE

I know them well. They average 24 years old, for I took a census of their ages. One owns rich mines in Mexico. One says he will be elected sheriff in his county in central Tennessee when the war is over. Another was an officer in the Philippine constabulary and resigned his commission to get into the greater game. One is a six-foot-four youngster from a clean home in Nebraska. He does not speak of his home, but one can always tell. Another was a Kansas City newspaper man, and another had been in business in Milwaukee when we declared war.

That is the sort of men they are—clean, lively, energetic Americans. I wanted to know why they were laughing, so I fumbled my way to a dark door and through a black hall and lifted a blanket curtain and stepped in.

"Thus," some one was saying in a pompous, professorial way, "we observe, gentlemen of the class in entomology, that when confronted by danger even the humblest—I might say the most despicable—insect manifests a marvelous intelligence."

The members of the class were stand-

ing on each other's blankets. A youth who had left college to enter the army was giving an imitation of the instructor he had evaded by going to war. Two men were seated on the floor. "Signals" was picking "cooties" from the seams of his clothes and depositing them on a space that had been cleared. "Stokes" was embalming them in drops of grease from a guttering candle.

A dozen white blotches on the worn red bricks told of the success of the pursuit.

HEROES WITHOUT GLORY

Perhaps the reader thinks there is something repulsive and disgusting in this tale of clean-minded young Americans picking lice out of their clothing and killing them by drops from a burning candle. Perhaps there is. Perhaps my mentality has been warped by almost four years of war. To my mind the men who can do this and still laugh—bearing in mind their rearing and the clean years of their youth—are almost as nearly heroes as those who "hop over" when the whistle sounds the zero hour.

The ones are called upon to keep up their courage under a day-long and night-long degradation—a constant, crawling, loathsome irritation—while the others spend themselves freely in one fine burst. I cannot distinguish between brave men.

I call them "cooties" as the soldiers do, and for precisely the same reason that they nickname these minor, or are they major? horrors of war. Only the surgeons and the surgical orderlies and the men who run the steam cleaning machines come out bluntly with the word "louse." They are practical men. Their business is to deal with human ills and weaknesses, and they are habitually pressed for time. Their talk goes straight to the point, like a probe. The poor devils who are lousy always shy at the word.

"COOTIES," "TOTOS," "CODDLERS," "PANTS RABBITS," OR "SEAM SQUIRRELS"

The American soldiers speak of the pest as "cooties." The French fighter talks of "totos" and the British tell of "coddlers." They know it is not their fault that they are infested, but the effect of years of civilian training persists.



Photograph by Herbert Corey

OBSERVING THAT WHICH IS NEXT TO GODLINESS

And here is a group of the doughboys waiting for their clothing, which is being treated for cooties in the delousing machine. The machine (see pages 496, 500, and 503) kills the insects and destroys the fertility of the eggs by subjecting them to the heat of live steam.



Photograph by Herbert Corey

AN AMERICAN ROLLING KITCHEN ON ITS WAY TO THE FRONT ON A RAINY DAY

Each company of 250 men has a mess sergeant and four cooks. Each cook has two helpers and four kitchen police. The "K. P.s" are seen standing at the rear wheels. It is their duty to find the wood and water and do the rough work. Note the tin hat slung to the collar of one of the mules.

They still feel, against all reason, that there is something shameful in their state. They try to assume a joviality they do not feel, and call the things "pants rabbits" and "seam squirrels" and speak of "reading their shirts."

"I'll meet you this afternoon," a non-com once told me, "down at Cootie Park."

Cootie Park was the grassy bank of a streamlet on which the sun shone warm. In the meadow was a flock of sheep guarded by two alert dogs, while the bent old shepherd carried the weaker lambs in his arms. Now and then he blew upon a brass instrument—half whistle, half squeak—and the flock and dogs obeyed his summons.

The disciplined sheep interested the boys immensely, as they sat there bare to the waist in the sunshine, going over their seams. Two discussed the shepherd and the sheep:

"Sure," one said, "he can blow every order we've got in the manual of arms. Last night I was watching him, and when it came time to start home he whistled 'Eyes right,' and they did."

TRUE MORAL COURAGE NEEDED TO BEAR THIS PLAGUE

This is not a pleasant recital, if one thinks in civilian terms of the louse as loathsome and suspects that the men who suffer from this plague are in some way to blame. At the very best it cannot be pleasant. But lately, since my own people have come into the war, and because I know them best and talk their language, I have begun to realize the moral courage that is needed to bear this plague without whining.

Many a man has told me that to be under fire would be a trifle if he could but be clean. Mud and thirst and hunger and cold can be borne with equanimity, but the louse carries the suggestion of degradation. Yet that, too, is sustained bravely.

"I have only known one man who cried because of the plague," a surgeon once told me. "That man went into No Man's Land on reconnaissance at night in as commonplace fashion as though he were taking the tram for the office of a morning."



Photograph by Herbert Corey

THE DOUBLE-BARRELED COOTIE CANNON IN ACTION

American youths waiting around while their cootied clothes are being cooked. As an evidence of the stress which General Pershing puts on cleanliness, a cable from the front announces that razors are now being issued to the enlisted men of the American Expeditionary Forces. Clean faces are adjudged to be an element in morale. In addition to a razor of the safety type, together with extra blades as required, each man is issued a tooth-brush, comb, hair-brush, soap, and towels. This is the first time in the history of our army that razors have been issued.

"I don't mind the nights on guard in the front trench," many say, "because the nights are cold and 'they' are quiet. But I dread the coming of the day, when I must crawl back into my dugout and try to sleep and know that I shall have to lie awake and feel 'them' crawl. 'They' become a torture."

Practically all of the men in the advance areas are lousy, according to a document that is accepted as authoritative. It is impossible to tell what proportion of the men in the rear and along the lines of communication and in depots are infested.

It is probable that the men in the French armies suffer to a like extent, for the conditions under which they live are identical with those of the other armies.

During the formative period of the

American army in France the men were able to keep fairly clean—only fairly—but with the opening of the year's activity they were set upon the same footing as their allies.

HOW THE SURGEONS WORK AFTER A GREAT BATTLE

The great fear of the military surgeons is the time following a battle, when the field hospitals and clearing stations are swamped by a flood of wounded men lying grimly silent upon their blood-soaked litters. Then the surgeons work in teams, each operator being accompanied by his ether specialist and his orderlies and nurses.

They go from table to table swathed in white, their instruments freshly cleaned and sterilized and glittering, their cotton

gloves white and new. Other men wheel in the tables on which the wounded lie and wheel them away again when the operation is completed.

The operators go on without pause, never asking after the fate of those who have been operated on, never looking ahead at the line of waiting tables, until exhaustion stops them.

TRENCH FEVER AND TYPHUS TRACED TO THE LOUSE

Such a gorge of hurt men is the thought that haunts the waking moments and the dreams at night of every surgeon at the front.

But such days are rare, while every day the louse must be fought. It carries with it the threat of epidemic. In the eastern field of war the louse is a typhus carrier, and there is no known reason why it shouldn't carry typhus in the west.

Trench fever has been traced home to it. Until a comparatively short time ago this was a mystery, with its recurrent chills and fever and the semi-paralysis that is an occasional result.

It is definitely known that a form of itch is to be charged against the louse, and a lowering of morale and a lessening of the power of resistance is certainly produced by it. In some cases men have been rendered so nervous by prolonged exposure to the irritation of the louse that they have been made unfit for duty.

THE RAT AND FLEA PESTS

There are other trench pests, of course. Perhaps one hears more of the trench rat, for sufferers from rats are almost morbidly candid in relating their experiences. Rats can be disposed of, however. Trenches can be policed into cleanliness and officers can enforce the rules against leaving bits of food about.

Without food rats cannot exist, and, being highly intelligent animals, they do not attempt life in sterile surroundings. They may be dogged and catted and trapped. At the most, the trench rat is little more than an annoyance.

He does run over the faces of sleeping men, and they waken their comrades to relate the fact. They discuss the odor of the rat's feet and the uncanny coldness

of them. He eats leather shoe-strings and bridles and sometimes nibbles on boots.

The flea is the rat's partner, and bubonic and other plagues have been traced to the rat-borne flea. The trench rat habitually grows to an enormous and unprecedented size, so that a cat must have an heroic soul to tackle one of them unassisted, but I have yet to hear a substantiated story of a man being bitten by a trench rat, unless that rat was cornered.

Sometimes one encounters a humorist who tells his story:

"I met a rat one night in the trenches by Zee-bray," said one man. "On the level, he looked bigger than a Great Dane dog. I stood there like a gentleman and waited for him to give me the right of way, but when he didn't, I just took to the parapet and let him go by. Sure, the Germans were shooting, but I didn't care. I'd rather take a chance with a Boche than with a rat."

THE FLY IS DANGEROUS AT THE FRONT

There is an odd insect known as the "spring tail" and many sorts of flies. Ordinarily the fly is dangerous at the front in precisely the same manner in which flies are dangerous at home, because he contaminates food.

There is a biting fly, however, which is especially prevalent in regions where there has been long-continued fighting and where the contending forces have not had an opportunity to clean up the battlefields. A variety of blood-poisoning has been traced to the bite of this fly.

But of all the vermin of the trenches, the chief pest is the louse. He is unescapable and ever present.

The primary reason is that the men have only intermittent opportunities to clean up. Theoretically, of course, the men of all armies are washed and dried and newly underclothed once a fortnight. Sometimes glad-eyed optimists clean up their men once a week.

THE LIFE STORY OF THE LOUSE FAMILY

Even if that were possible, the louse would not be disposed of. He would manage to cling in the overlooked fold



Photograph by Herbert Corey

PART OF DOUBLE LINE OF MEN WAITING BEFORE A Y. M. C. A. TRUCK IN FRANCE FOR THE SALE OF CIGARETTES AND CHOCOLATES TO OPEN

The truck was two days behind time, because of road and other conditions, and the men had been chocolateless and cigaretteless for that time. The supplies, of course, made available at the smallest possible cost. Tobacco is now being supplied to American soldiers as a part of the army rations.



Photograph by Herbert Corey

THE FRIEND-IN-NEED IN USE AT THE AMERICAN FRONT

Despite their discomfort and the disgust which they feel at being infested with vermin, a condition for which they are in no respect to blame, the American troops in France never whimper. With splendid fortitude they joke about that which cannot be helped. "I don't mind the hicks now," said one soldier, "for all I have to do is to sort of shoo my shirt along."

of a blanket or under the collar of an overcoat. And by and by romance would begin to sing in his blood, and he would meet a lady louse and set up housekeeping. Whereupon a whole cityful of younglings would appear, and the unfortunate who played the part of an unwitting host would go back to his moments of uneasiness during the day and his hours of sleeplessness at night.

But under army conditions the men are almost never given a chance to clean up so often.

Let me tell the story of the outfit I have been living with for the past few weeks, because that story is typical of a regiment which has had a fairly good opportunity to keep free of the pest.

For some weeks it had been kept in the trenches, one battalion at a time. The men "up front" had no chance at all to keep clean.

They did not even wash their faces. There is no water whatever in the trenches, except when there is too much water, none of which is fit for use. The little that comes to the men in line is carried in at night, in galvanized-iron

containers, by the men who have been told off for that duty.

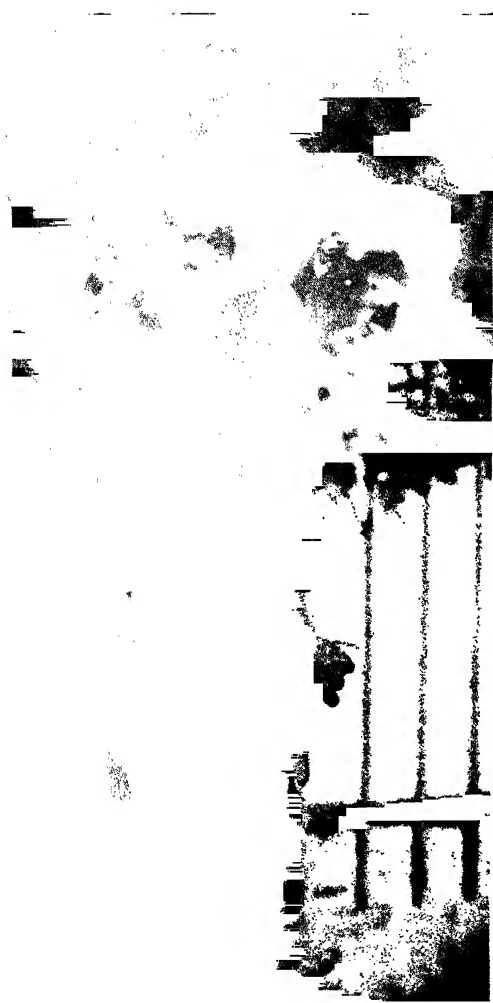
Usually the "carry" is a long one. One may say that it is practically never less than two miles, because of the German guns. The cans are unchancy things to handle, and only the water absolutely needed for drinking purposes is carried in.

DAYS AND NIGHTS IN THE TRENCHES

During their time in the trenches most of the men are on duty all night long. By day they are required to stay in the dugout, not only for the sleep they require, but to be out of sight of the enemy and out of danger from his bombs.

A dugout is, in nine cases out of ten, a mere dirt-roofed hole in the ground. Sometimes it is a luxurious one, with a board floor, on which the musty straw is piled. Sometimes an abundance of straw makes up for the lack of boards. Sometimes there is no straw.

It is rarely large enough to accommodate the men, and if it were large enough the chill of a damp hole, into which the sun never shines, forces them to lie spoon



Photograph by Herbert Corey

THE MASCOT OF THE MARINES, WHO MADE
HISTORY AND WON IMPERISHABLE
GLORY AT CHATEAU-THIERRY

This ant-bear has accompanied the soldiers of
the sea from the tropics to Picardy

fashion, each wrapped in his blanket, each seeking the warmth of the other man to add to his own comfort. It is ideally adapted for the furtherance of all insect plagues. No matter how scrupulously scrubbed a man may be when he enters a dugout, he usually comes out lousy.

When the regiment of which I speak left the trenches the men got a chance to clean up. Two days is always required for that—if not more—because the first day is spent in resting. The men are exhausted by the long hours and the scant sleep and the nervous tension under which they have been living.

The officers saw to it that each man bathed and each man was given a fresh suit of underwear. Then the "replacements" came.

THE "REPLACEMENT" MAN A COOTIE
DANGER SOURCE

A "replacement" is a man sent to a unit to take the place of one of the men the unit has lost. No matter from whence he comes, in a properly handled regiment he first goes into quarantine. A surgeon looks him over, to see that he is not suffering from a contagious disease. Then he is examined for "cooties."

If he has them he is sent to the guard-house and kept there, not as a punishment, but to be sure that he does not spread his pests among other men, until he in turn can be bathed and newly outfitted.

"Tomorrow we hike" was the word after dinner one night.

The regiment got under way at two o'clock in the morning, and for two weeks each day was too full to permit of proper cleanliness. Sometimes we hiked. Sometimes the day's program called for close-order drill, or special instruction for almost every available hour.

BATHING AN ORDEAL IN NORTHERN
FRANCE

There were no moments left for bathing, and if there were, a bath in the cold water of the streams of northern France presents slight attractions to the man who has worked hard. There is always the hope that tomorrow may be a better day.

At last we reached a billet which was to be permanent for at least two weeks. It was only by diplomacy and unflagging industry that enough wood was found to keep the fires going in the rolling kitchens.

Hereabouts the peasants cook over fires that might almost be covered by a pocket handkerchief. As fast as the end burns



Photograph by Herbert Corey

HOW THE REFUGEES LEAVE A DEVASTATED TOWN IN FRANCE

A tiny dog-cart, piled high with odds and ends of household furniture, represents all the possessions saved by a peasant family which must start life anew in some distant section of France. So suddenly does the order of evacuation come that the civilian population seldom has time to make a choice of the things which can be saved.

off, the sticks are moved forward to present a fresh surface to the flames. The fires are all made of little twigs. Each year the peasants lop off the branches of certain trees and make them up into bundles for the winter's fuel. The season's provision for a farming family is unbelievably small.

"There are enough stumps in my old man's woodlot to boil soup for all France," a disgusted soldier told me one day.

"Cooties" can be killed by boiling water, if the water is hot enough and boiled long enough. The women of France rarely use hot water for the washing of clothes.

THE COOTIE IS A HARDY INSECT

In every village in the north there is a municipal laundry, in which the women kneel and souse the soiled linen in cold water which trickles into a tub, and then thresh the linen upon rough stones. The process is repeated until the cloth takes on at least the appearance of whiteness.

But this process does not kill the "cooties." The adult cootie is a fairly hardy insect and the eggs are extraordi-

narily resistant to rough treatment. The scientists who have been inquiring into the louse problem among the armies of the Western Front have found that clean clothes may be infested from these community wash-houses. The eggs remain upon the rough surfaces of the stones on which the linen is scoured and are taken up by the next armful of wet clothes.

If the scientists had their way they would either have the clothes of the soldiers washed by army specialists or by the soldiers themselves. They would forbid the men taking their clothes to the village *blanchisseuses*.

But the American soldier is a luxurious creature and has money in his pocket. He prefers to have his laundry done by the women, and he can hardly be blamed. If he were to do his own week's wash, he would be forced to do it at the same place and on the same stones over which the peasant laundresses work each day.

When there is no hot water to wash the men's clothing there is no hot water in which the men themselves may bathe. It is true that one sometimes finds a mu-



Photograph by Herbert Corey

THE SMALLER FRENCH VILLAGES ARE SERVED BY TRAVELING STORES OF THE SORT SHOWN HERE

Every necessity of French rural life is carried in them, from cap ribbons to plow-points. The American soldiers are looking for something to buy, for they have plenty of money in their pockets, but the contents of the traveling store rarely appeal to their tastes.

municipal bath-house in the tiniest villages, but ordinarily the men are obliged to take their baths at the edge of a stream. Even when quarters are established for a stay of some time, it is not always possible to make better arrangements.

HOW THE BRITISH FIGHT THE COOTIE

The British take notably good care of their men in this respect, yet I found only a cold-water shower at a school for officers last winter. The water could not be heated, and so the Britons went under the splash and came out even pinker than when they went in. It sends a chill down my sensitive spine even yet to think about it.

"I got a hot bath yesterday," said the colonel's orderly. He was so extremely set up over it that I asked for details. He had built a small fire between bricks, fed it with bits of twigs he had collected and little parcels of straw and other odds and ends, and heated water in the cup of his canteen and used his mess tin as a bathtub.

Many cups of water were heated and he had bathed himself by fractional parts. But in the end he was entirely clean.

Not many men will go to such trouble, however, and in fact he secured an esthetic rather than a sanitary satisfaction from the process; for he had no way in which his clothes might be boiled.

In the month of which I am writing only a few lucky men of this regiment had hot baths. This includes the officers as well as the private soldiers. The men did what they could by cold-water baths and cold-water laundering to keep the pests down, and they have been aided by the insect powder which is distributed from time to time. Unfortunately it has not always been possible to get a sufficient quantity of that insect powder, because of conditions into which it is unnecessary to go.

A GASOLINE SPONGE-BATH FOR WRITHING SOLDIERS

If ninety-nine out of every one hundred men were absolutely free from "cooties," the hundredth man would infest the ninety-nine in a week's time under military conditions.

Sometimes unusual methods are resorted to. In a regiment largely made up of national guardsmen the hospital order-

lies took charge of one platoon which, through no fault of its own, had become infested.

At that billet there happened to be plenty of gasoline—a condition which rarely exists nowadays. The hospital man managed to commandeer a quantity. Then the men stripped and their clothes were literally soaked with gasoline.

An unusual spectacle followed. The hospital orderlies armed themselves with swabs tied to the ends of sticks. They dipped the swabs in open cans of gasoline. Then they swabbed the men.

"Ouch!" was the first remark made by each man as the gasoline filtered into the raw places where he had been scratching himself. He rarely paused with that exclamation; but the hospital crew was relentless.

"Stand up," they said sternly. "Whoa!"

It developed that they had immediately before been swabbing horses with gasoline for the same purpose and the words came naturally to their lips. The poor men being swabbed danced and swore, but they had to submit, for an under-officer supervised the process.

Physicians tell me that it is not at all certain that gasoline will kill the nits of lice, but the hospital orderlies had no doubt whatever as to the efficacy of their process. They manifested an artistic satisfaction in the swabbing, so that not a single nesting place in which eggs might be hidden was overlooked.

Later I asked the men who had been swabbed what the result had been.

"Fine," they said, their faces glowing. "It's a bully hunch. We're going to swipe some gasoline and go over ourselves now and then. It sure does kill the 'cooties.'"

HOW THE COOTIE STARTED

No army in the European field has a preëminence in cleanliness over any other army. The most that can be said is that some armies are worse than others.

It is assumed by those who have inquired into the subject that the louse obtained his foothold in the early days of mobilization, when Apaches from the slums and ruffians from the docks were herded into barracks along with men who had never known what it was to be any-

thing but clean. So the louse spread and propagated until now its diffusion is general.

If every man and every stitch of cloth in every army were to be thoroughly freed from the pest today, in a week each man might be infested again. Enough "cooties" would be left over in unsuspected places to make a fresh start.

With all Germany's boasted ability to organize, the louse has fairly ravaged her armies. In the latter months of 1914 I visited a great prison camp near Berlin, in which 9,000 military prisoners of war were herded behind a high wire fence. They had no hot water and no soap and no bathing facilities. Those who wished might wash themselves in an iron trough, such as horses are watered at, which stood in the bleak openness of the prison parade ground.

FIGHTING THE PEST IN GERMAN PRISON CAMPS

Only those who have felt the moist cold of Germany penetrate through wool and fur to the very bone can realize the sturdy courage of the men who went to that horse trough day after day and did their heroic best to keep themselves clean.

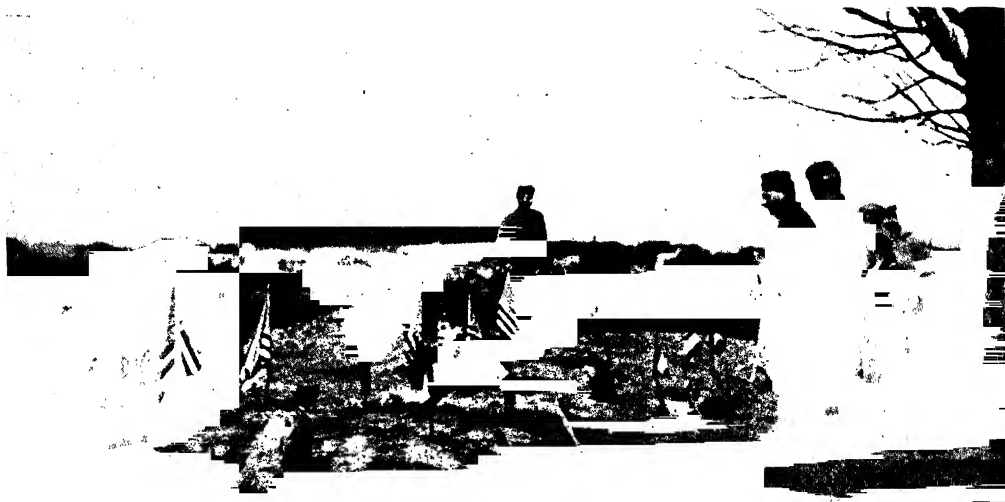
Others sat in long rows on the pallets of dirty straw in the cavalry stable tents which sheltered them, naked to the waist, while they attempted to kill the plagues that were driving them mad.

That was in 1914. I often wonder what has become of those men—if they have had the courage to live on amid such infernal torture.

The German armies were infested, so that one of the most popular charities in the Empire was the "Delousing Fund," which furnished various insecticidal compounds to the men at the front.

The Russian prisoners were infested to the last man—infested to a degree that no one unacquainted with army conditions would believe if I were to tell the unvarnished story—and through their plague brought the spotted fever to Germany in 1915. The Russians themselves were fairly immune, but it is said to have cost the Central Empires many lives before it was conquered.

Nowadays it is realized by the scientists who have given their time and



Photograph by Herbert Corey

AMERICAN AND FRENCH SOLDIERS PAYING A SILENT TRIBUTE TO THE
AMERICAN DEAD

The flags which float above these newly made graves are the tribute of the Americans; the wreaths are the homage of their French companions

their blood to a study of the problem, that a high degree of heat and rigorous cleanliness are the only means by which the plague can be successfully fought.

N C I POWDER USED IN WAR ON THE
BEASTIE

The N C I powder, supplied to all the armies, will free the men from the beastie if they have some little chance to keep clean while they are using it. One application is considered good for five days. It is made up of naphthalene, 96 per cent; creosote, 2 per cent; and iodoform, 2 per cent. It would not be favored in civilian circles, because the user of N C I advertises that fact to the most casual passer; but it does the work.

Another objection to N C I is that it causes severe smarting if used in large quantities; but the men seem not to object to that. The soldier who is thoroughly inured to war seems to care little for bodily pain. I have seen men at hard work whose slight wounds had been only partially healed, so that each movement must have been productive of pain.

The Englishman, if asked about it, grins and says that he must "carry on."

The American says: "We've got to get through with it." The Frenchman assures you that it makes no difference to him.

There are other treatments. One is a vermijelli ointment, with which the men smear themselves almost from head to foot. A preparation of crude oil and soft paraffin melted together sets like a salve and is very useful when similarly used. A mercury ointment is likewise employed with success, but all these are merely temporary expedients.

It is when the men come into rest camps that the "cootie" is properly handled. Heat and hot water give temporary relief from the scourge. The method usually followed is that of the British army.

THE DELOUSING ESTABLISHMENT

The men enter the first room of a three-room bathing establishment. There they undress and hand their soiled clothes through a window to a receiver, who sends the bundle to the "delousing machine."

They pass into the middle room and take a thorough bath with plenty of soap

and plenty of hot water. A non-com is at hand to see to it that the occasional man who objects to cleanliness nevertheless follows the example of the others.

Then they move into the third room, dry themselves and put on clean clothes. These may not fit, but they are clean. The shirts, socks, and undergarments have been subjected to 215 degrees of heat in live steam for three-quarters of an hour, or sometimes are boiled for five minutes. The outer garments are thoroughly brushed and then ironed with a very hot iron down every seam and in every possible hiding place for the "cootie," or the eggs.

LOUSE HABITS DURING THE WAR

When it is not possible to arrange permanent cleaning-up establishments of this sort, the men are made to bathe as best they can, and their inner garments are steamed in huge horse or motor drawn "delousers," which hang about the rear of every army nowadays. Absolute cleanliness is not secured, but the evil is greatly reduced.

"The plague may at least be reduced to a minimum," remarks an English authority. "It is not so much a matter of pure science as of common-sense management."

Some interesting facts have been revealed by the scientists who have made an examination of louse habits during the war. One is that dugouts and buildings are never infested. The cold straw and the damp walls do not present any attractions to the bug. He does not even stay upon blankets any longer than is necessary. His home is in clothing that is being worn and from which he ventures to feed.

In an official document it is stated that in the British army 95 per cent of men who have seen six months' service are lousy; that the average number of lice per man is 20, and that 50 men to a battalion of 1,000 are dangerous carriers, each bearing from 100 to 300 lice.

A HIGH-RECORD SHIRT

One shirt was found to contain 10,428 lice, and more than 10,000 eggs were found under the microscope. This probably establishes the world's highest record, although nurses who served through

the typhus epidemic in Serbia in 1915 told me that they had seen gray patches the size of one's two hands upon the bodies of men brought into the hospital. The pests were so thick in these patches that from a little distance they presented the appearance of a felted cloth.

The beast seems to lack intelligence, however, for in all the experiments no deliberate effort on his part to reach the human body has been observed. He is a creature of opportunity and environment.

Eggs have been hatched after a dormancy away from the human body of forty days, and single insects have lived and flourished on good feeding grounds for thirty days; but the longest period in which any survived separation from its human host was nine days.

NO ARMY IS CLEANER THAN AMERICA'S

Every effort is being made to keep the men of the American army free from "cooties," for the American surgeons and officers fully realize the danger that may be carried by the pests. During the early months of our army in France the French baths and the English delousing machines were used, but now we are getting baths and machines of our own.

Clean underwear is furnished the men at every opportunity, and they are given every possible insecticidal device, from the "cootie bags" of the French to the "navvy's butter" of the British. It is not too much to say that no army is cleaner than the American.

The fact that most impresses the observer, however, is the cheerful courage with which the American soldier is bearing this, as he is bearing every other danger and discomfort of the war. By preference he disguises his repugnance with a rough form of humor.

One man told me, as he left the trenches after a two weeks' stay, that he had "little cooties" feeding on the "big cooties" now, and another said he didn't mind the hikes, because "all I had to do was to sort of shoo my clothing along." They never whine. They say they have "cootied" or they have not and do not add a comment.

Perhaps that is not the courage that seeks a fleeting glory in the cannon's mouth, but it seems to me it is a fine courage just the same.

HOSPITAL HEROES CONVICT THE "COOTIE"

IT WOULD be highly appropriate if the United States Government were to confer a special decoration upon sixty-six young American soldiers who have displayed unspectacular, but unsurpassed, courage in France, a courage that dared wasting illness, in a hospital subject to the bombardment of Hun shells, in order that future millions who are to make their way from our shores to the battle front may be spared the suffering and the disabilities of trench fever.

The courage which these sixty-six boys have evinced differs greatly from that induced by the battle call which sends men shouting "over the top." In volunteering to undergo tests which have identified trench fever as a germ disease they knew what they were facing—months, perhaps a year, of illness, of voluntary imprisonment in a hospital ward, of removal from all the activities and the excitement of the soldier's life in a foreign land, and from the companionship of comrades in arms. They were, necessarily, men in perfect health, many of them wholly unaccustomed to, and therefore dreading, the strangeness of hospital wards, of surgeons of medicines, of blood injections, etc.

THE INOCULATION TESTS

The knowledge which these heroic sixty-six, by offering up their virile bodies to a disease test, have enabled science to acquire may prove the determining factor in the world war, for it may mean the conquest of trench fever, just as the sacrifices of a smaller group of men 18 years ago enabled Walter Reed and his associates to identify the mosquito as the insect which carries yellow fever. Once the source of the contagion was discovered the fight against yellow fever was more than half won.

The experiments conducted on America's Sixty-six have fastened the guilt of contagion-bearing upon the body louse, the "cootie," of which Mr. Corey writes in the preceding pages.

The first question studied was whether this was a germ disease. No germs could be seen with the microscope, but the U. S. Medical Department knew that there are numerous germs which cannot be seen by even the most powerful magnification.

Therefore this point had to be established by taking blood from men with the fever and injecting it into healthy men. Out of 34 such individuals inoculated with blood, or some constituent thereof, taken from seven cases of trench fever, 23 volunteers developed the disease. Out of 16 healthy men inoculated with whole blood from a trench-fever case, 15 developed the disease. These experiments proved that trench fever is a germ disease, and that the germs live in the blood of men so infected.

LEARNING HOW THE DISEASE IS SPREAD

The next question was, "How is this disease spread?" Naturally, the body louse was to be considered first. Large numbers of these were collected from patients with trench fever, and also some of the same kind were brought from England, having been collected from healthy men. The lice from trench-fever cases were allowed to bite 22 men. Twelve of these later developed the disease, while four men bitten by lice from healthy men remained free from the disease. Eight other volunteers, living under exactly the same conditions, in the same wards, but kept free from lice, did not develop trench fever. After blood inoculation the disease developed in from 5 to 20 days. After being bitten by infected lice the fever required from 15 to 35 days to develop.

With such data in their possession, the medical departments of the Allies have taken up the problem of the "cootie" in its bearing upon the supreme question of winning the war. Until recently the odious vermin have been considered only in the light of bodily annoyances to the troops, in some cases having a certain effect on their morale. Now, however, the battle is on in earnest to rid the men of the disease-bearers, for when a man falls a victim to trench fever he is, in the average case, unfit as a fighter for six months.

It is a simple problem in multiplication to appreciate how tremendously America's Sixty-six may have contributed to the power of our blows against the Huns by giving science the information which will result in keeping our soldiers fit for service.

A BATTLE-GROUND OF NATURE: THE ATLANTIC SEABOARD

BY JOHN OLIVER LA GORCE

AUTHOR OF "ROUMANIA AND ITS RUBICON," "THE WARFARE ON OUR EASTERN COAST," ETC.

THE operations of the sea assassins of Prussia on our eastern coast, in a futile effort to stay the mighty blow America is beginning to strike against despotism, brings into bold relief that ever-changing stretch of coastline we so proudly call our Atlantic seaboard, which the writer outlined in an article published in the September, 1915, issue of the GEOGRAPHIC.

As the crow flies, it is some sixteen hundred miles from the out-harbor waters of Eastport, Maine, to the key-guarded shallows of Cards Sound, Florida; but as the shore stretches southward, miles lengthen into leagues, rocky citadels give way to shifting sands, and both yield place to coral reefs.

He who would follow the foreshore from northern Campobello Island to southern Largo Key has a journey that while taxing his legs would certainly stir his soul, for in doing so he would traverse the length of a battle-front in the most ancient, the most far-flung, the most unrelenting, uncompromising war ever staged between puissant forces of nature—the war between land and water, with the wind as a shifting ally.

This warfare, harsh in its local results, is yet one that by its analogies has comfort for suffering humanity in the present hours of stress and crisis, for the final results, however serious the momentary aspects, are beneficial to mankind.

Before visiting the various sectors of the seaboard battle-front to study the more intimate details of the war between the sea and the soil, let us endeavor to get a bird's-eye view of the great conflict that started long before man appeared upon the face of the earth, and which can only end long after the planet is no longer fit for his habitation.

Every coast-line on the globe, be it that of a great continent or a tiny island, is a theater of nature's struggle, in which the

warring forces are marshaled; every rainstorm is a vast squadron of airplanes of the sea, a veritable Neptune's Escadrille, sweeping the shock troops across the No Man's Land of cliff, beach, and reef, onward to the very heart of the land forces' strongholds, the mountains, where they wheel about and launch a rear attack with swollen torrent, hail, and ice.

Each drop of water is indeed a soldier of the sea, doing its small part, as it descends with force, in conquering the hill-side, and its drum fire is to be reckoned with, because each inch of rain brings down one hundred and thirteen tons of water upon every acre of terrain upon which it falls.

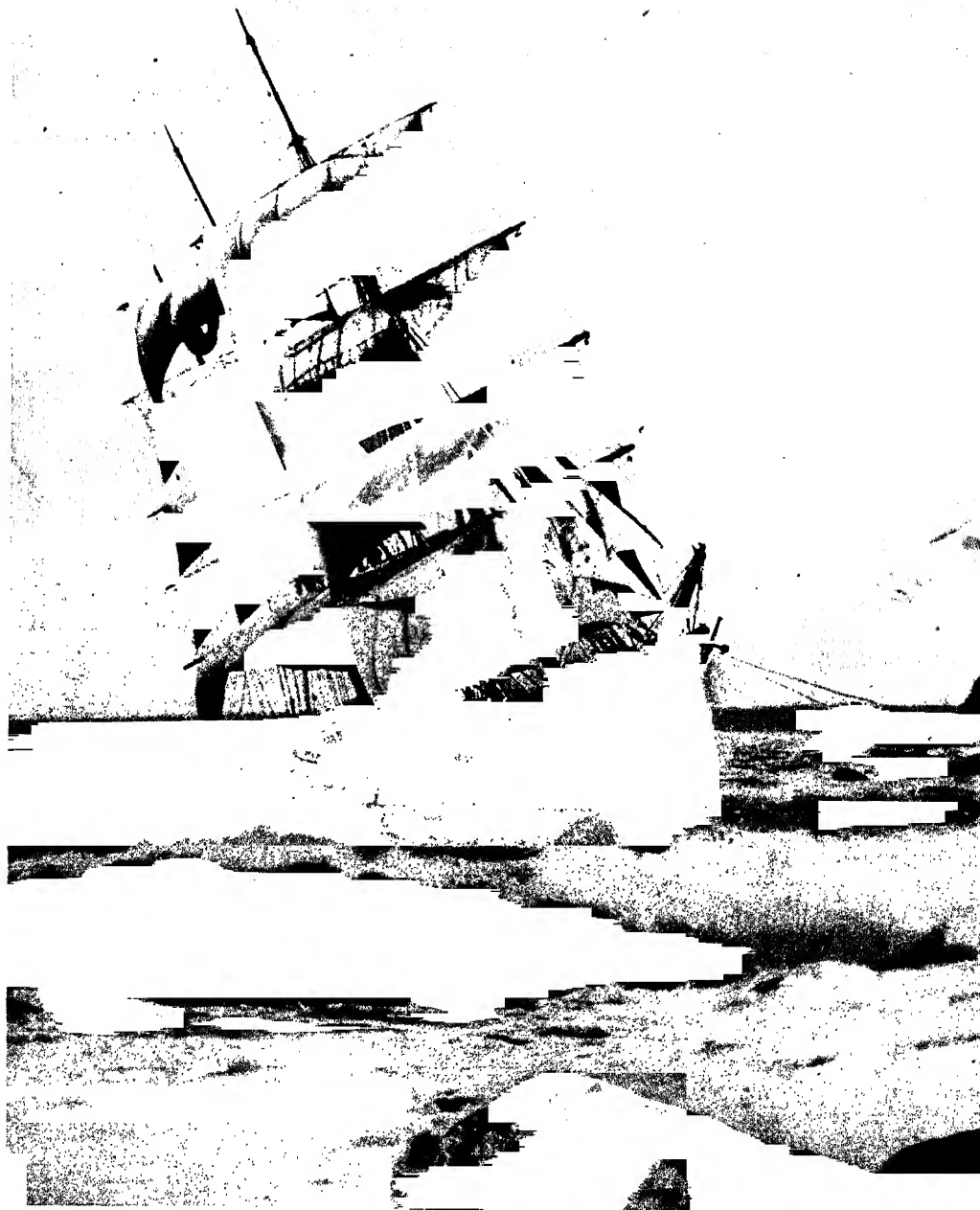
THE AIR FLEETS OF THE SEA

As the tiny soldiers concentrate first in rivulet regiments, then into mountain-torrent divisions, and finally into big-river armies, they madly charge the rocks and grind them to dust by attrition and carry the captive sands ever onward to the sea.

The vast forces of the sea which are sent out in air fleets beggar belief. The rainfall of the United States perhaps averages 30 inches a year. On that basis every acre of ground is attacked by three thousand tons of water. And the water armies, marching back to the sea as rivers, take along a hostage of well-nigh unbelievable proportions, since it has been estimated that they carry some twenty-five billion tons of captive material with them.

The prisoners of the Mississippi might be used for an example, because their aggregate volume is greater every year than the total amount of material removed from the Panama Canal from the hour de Lesseps turned the first sod to the glorious day Goethals pronounced it a finished undertaking, or approximately 506,000,000 tons!

It often happens, however, that the seemingly vanquished turn on their cap-



Photograph by Charles A. Harbaugh

A BELGIUM IN NATURE'S WARFARE: WOUNDED, BUT UNBOWED

tors just as they come down to the dead line of No Man's Land and succeed in saving themselves from the prison camps of the sea bottom.

In such cases they form themselves into river deltas, like those of the Mississippi, the Po, the Euphrates, and the Ganges, although our own seaboard captives are not so fortunate, since deltas are conspicuously absent from the river mouths of the North American Atlantic and Pacific coasts.

In the attacks of the sea upon the land via the air, it is the constant endeavor of the water forces to bring the whole dry land area under its liquid fist. If the sea ever succeeded in its program of world dominion, which includes dragging every mountain down and filling up every ocean trench with the material graded from the land in a leveling process, there would be a universal ocean nearly two miles deep over the face of the globe.

WATER'S ALLIES IN ITS AIR ATTACKS

The water has as allies ice and atmosphere in its air attacks upon the land. Seeking out the fissures in a cliff and filling them, the water waits until the frost comes and forms ice.

No giant of any age, no superman, imagined or real, ever put his shoulders against an object with such smashing invincibility as is evidenced in the forming crystals of a piece of ice, while the air, elusive, unsubstantial, as it may seem when compared with water, is yet no mean confederate, because with its power to attack through chemical transformation and its extreme mobility, it can work important results even in a brief campaign.

Yet more to the immediate point of this discussion is the frontal attack of the sea against the land. With wave and tide and wind and undertow, with coast-wise current and ground swell, the sea pounds perpetually at the gates of the land fortifications.

Starting at Eastport, Maine, let us take a mental journey along the battle-front and watch the great drive of the sea and the defensive tactics of the land. On the northwestern shore of Campobello Island, that beautiful bit of British ground which forms the seaward wall of Eastport harbor, stands "Old Friar,"

a remarkable rock, isolated and solitary, alone with its memories of a bygone day.

It is but a different version of the "battle" rocks that dot the granite fortifications for many weary miles on this coast. These sturdy sentinels are isolated forces which have withstood the buffeting of the foe's advance and are the outposts of the land legionaries in their mortal combat with the wave army that sweeps the coast in relentless fury. Their supporting forces have fallen back, the watery foe has entirely surrounded them, yet boldly they defy his onrush and present an inspirational picture of adamant resistance, as they break up the assault of the succeeding waves that rush against the main defenses.

Enduring, inflexible, they continue to hold where their weaker brethren yield territory inch by inch. No Ten Thousand Immortals, no Guard Regiments, no Macedonian phalanx, ever stood their ground more nobly than do the pulpit rocks of the Maine coast.

THE BATTLEMENTS OF THE MAINE COAST

We have not traveled far when we discover that the Maine coast is an unbroken series of steep battlements. Without power to advance, without mobility to shift their positions, these cliffs are destined to a defensive plan of campaign, while the waves possess initiative, and their generalship is of no mean order.

Breaking relentlessly upon the eternal rocks, the waters might still wage a vain war, did they not succeed in capturing from the cliffs stones and boulders which they use as projectiles when they return to the attack. Here hard, ungrained granite armor-plate stands in the path of the onrushing waves, with, such undaunted and unconquerable strength that, smash as they will, hammer as they may, the waves retreat after their attack, powerless to entirely reduce the defenses.

Farther along is another great mass of similar material, and it stands with corresponding might against the sea. But between them there is a series of cliffs made up of softer rock—the old men and the young boys of the land forces. Their morale is not high, their strength is not great, and so they give ground.

The flanks hold, but the center yields,



Photograph from R. H. Newcomb's

"THEY SHALL NOT PASS"

Artillery of the sea shelling a Verdun of the shore: Pulpit Rock, Nahant, Massachusetts



Photograph from R. H. Newcomb

THE LAST STAND OF A LAND DIVISION SOMEWHERE OFF THE COAST OF MASSACHUSETTS



© H. C. Mann

FATHER AND SON: CAPE HENRY, VIRGINIA

The old light tower was the first built by the American Government. The land army has defeated the sea at this point and driven it back nearly half a mile since the old light was established in 1791.

and alas, the untiring foe drives a salient into the lines of the land and uses the booty captured in his next drive. The salient is a bay or cove, and the wings are the headlands that bound it.

If one thrust be not too bitter, or if the retreating shore-line finally reaches a secondary line of defense on firmer ground, the enemy is held; otherwise it drives around the headland on all sides; and thus do "pulpit" or "chimney rocks" become lone outposts.

WHEN THE SEA ENCOUNTERS CROSS-FIRE RESISTANCE

It often happens, however, that when the thrust of the sea becomes too deep, the flanks of the attacking forces are exposed to the cross-fire resistance of the headlands, and finally reach a degree of penetration where they cannot maintain communications, and their attack comes to a standstill. In such a case we have a deep bay where the rushing waves of the sea lose their force before they sweep the inner shore-line.

One does not have to study the warfare waged by the sea very long before discovering that it not only uses "pincer" tactics, but that it also makes use of mining operations. Sometimes it finds that its most powerful onrushes are dissipated by the resisting power of a great headland, as the dew is dissipated by the morning sun or the darkness by the light of day.

With boulder and shingle the waters drive furiously at the base of the cliff, tearing away its foundations inch by inch and foot by foot until a soft spot is uncovered, and the sea enemy finally undermines entirely the great structure of defense. Then with the hydraulic pressure of an imprisoned wave it heaves forward, and the rocks above have no alternative but to tumble helplessly into the maw of the liquid host, to become projectiles in the sea's further assaults.

Often, too, the rushing waves find a weak link in the armor where one ledge of rock overlies another, with gravel or clay between. Yard by yard they wear out this grouting material, and a sea cave is the result.

The ledges which constitute the roof and the floor, respectively, have a dip to-

ward the sea, and as the waves rush in they come nearer and nearer to the surface, until finally they break through at some joint in the roof, and we have the spouting horn—a trumpeter of Neptune who gives the gage of further battle with each flooding tide.

At still other places the waves drive back the softer shore and bare a long stretch of adamant on each flank. And then it comes to a spot in this flinty headland that is weak, and cuts its way through, making a graceful arch of a wonderful, wave-hewn natural bridge.

The tremendous power of the sea in utilizing the boulders it has wrested from the land in its return to the attack surpasses belief. Huge rocks, weighing seventy-five tons or more, have been moved by the power of the waves.

THE 42-CENTIMETER SHELLS OF THE SEA

Driving the big boulders up against the cliffs as though from a giant catapult, these 42-centimeter shells are finally worn down into cobble-stones, then into pebbles, then into sand, and at last into silt, which, caught up by the undertow, is borne along and out to sea, a bit of land forever in the prison-camp of the ocean.

As a result of the terrific grinding of the glacial ice of ages ago and in the following centuries under such methods of attack as have been broadly sketched, the Maine coast beyond Portland has become a series of gulfs and bays and headlands, with islands and rocks without number as the observation posts and first-line defense against the sea.

From Portland to Newburyport the bold cliffs gradually lower their towering forms and beaches and broad bays appear (see page 523). From Newburyport to Woods Hole is about eighty-five miles in a bee-line, but if you follow the shore around Cape Cod Bay and down along Nantucket Sound it is some three hundred miles. In that stretch of coastline one might see fairly good types of all the shores from Greenland to Florida. There may not be fiords like those of the far north or swamps like those of Virginia, Georgia, and Florida, but there are enough shore-line features to fascinate any pilgrim who would wander that way.

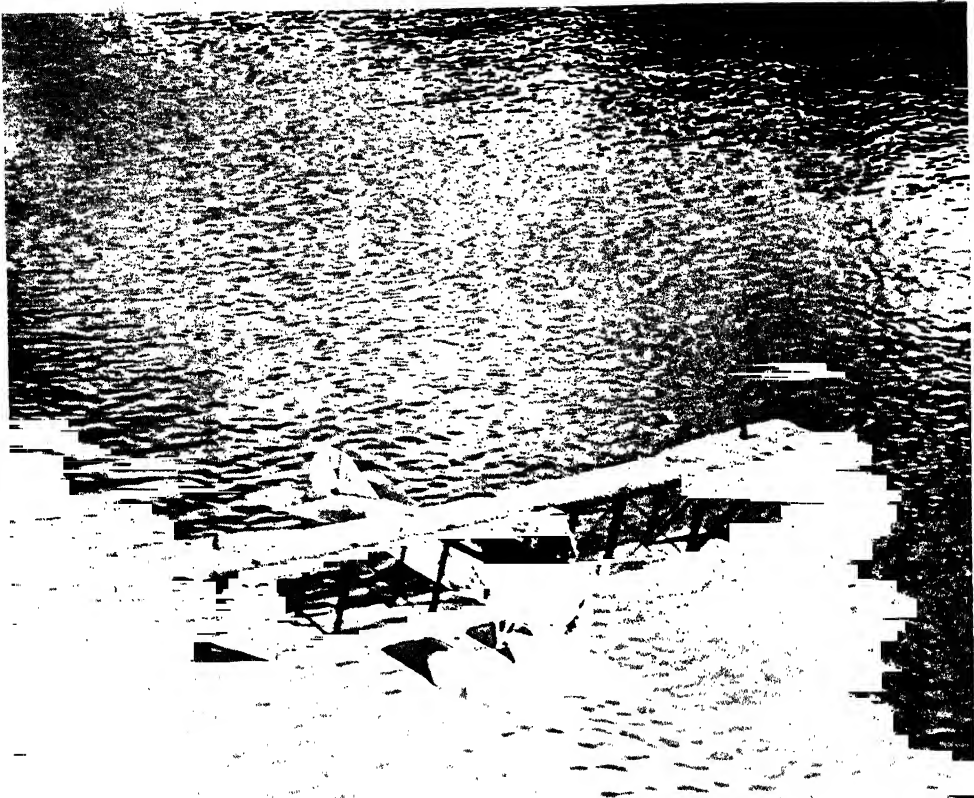


Photograph by Carl J. Lomen

AN INNOCENT BYSTANDER CAUGHT BETWEEN THE BATTLE LINES



Photograph by H. C. Mann
OBSERVERS ON THE BATTLE-FRONT OF NATURE'S WORLD-OLD WAR: OFF THE VIRGINIA CAPES



Photograph from M. Rosenfeld

A NEUTRAL OBSERVER SURVEYS FROM ALOFT THE ETERNAL CONFLICT OF THE LAND
AND THE SEA FORCES

A GIBRALTAR OF THE AMERICAN SEACOAST

North of Gloucester lies Cape Ann, with her pocket beaches. Here the waves run high and dash themselves with unpitying force against the solid old rock; but she holds firm, a Gibraltar of the American seacoast, guarding the outer approaches to Boston, as the wonderful British fortress has stood watch and ward in the path of the invader of the Mediterranean. So wild is the sea here that it is said that a sharp-angled fragment of stone as large as a steamer trunk is often worn as round as a tennis ball in the course of five years.

Many a brick and coal laden ship has perished upon such shores as these, and their scattered pieces of cargo have been ground to bits under the incessant hammerings of one another under the urge of the waves.

Marblehead, on the northern shore of Massachusetts Bay, is worthy of its name, and often the sea resorts to unusual tactics in trying to conquer it. Shaler, the well-known authority on geology, tells of witnessing an attack in which the sea used seaweed as its ammunition train. Sometimes these plants grow in shallow waters and wrap their roots around boulders on the floor of the ocean. Then, as the surging sea rolls in, it lifts the seaweed on its buoyant bosom, and the plants in their turn tug at the rocks which their roots enmesh, until finally the boulders are lifted clear of the bottom and carried along into the maelstrom of attack.

It is too hard a struggle for the seaweed, which is quickly torn asunder, but the stones are driven up to the attack again and again. As much as ten tons of these seaweed-borne rocks are sometimes cast up upon a quarter-mile stretch of shore-line by a single storm.

COMMUNIQUE OF NATURE'S WARFARE

Farther south, on the northern wing of the Atlantic battle-front, lies Lynn, and in the sea below Lynn lies Nahant Island, which bids us hope, for here at last the sea has lost the initiative, the land has assumed the offensive, and in an inspiring counter-attack is demonstrating its ability to give blow for blow and to match maneuver against maneuver.

Indeed, here for the first time we are to learn, in Nature's War Communiques, that the hardest rocks of the northern coast are more yielding than the softest sands of the southern waters and, in spite of local engagements fought with fluctuating results in this or that sector, as a whole, the land is holding its own from Lynn to the silver sands of Alton Beach at Miami.

In the counter-attack in the Lynn sector the land has built up a sandy beach between Nahant Island and the mainland.

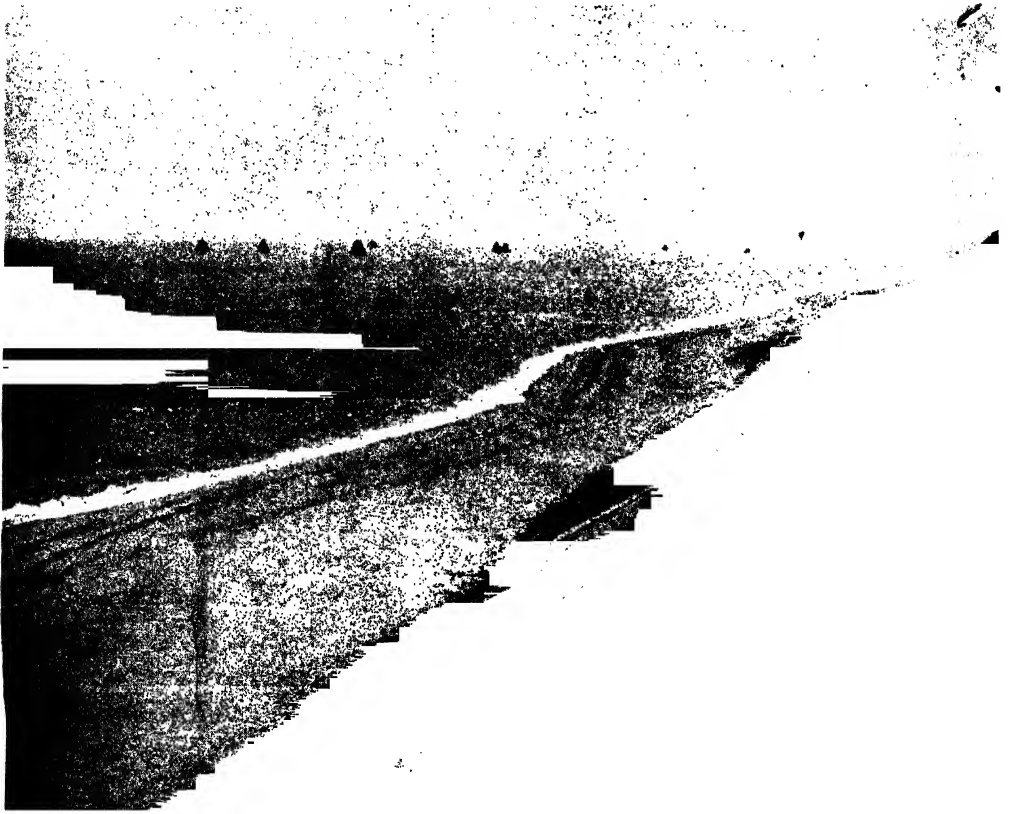
Passing the Boston sector, where comparative quiet has reigned for some time, midway between Plymouth and Barnstable, where Buzzards Bay on the south and Barnstable Bay on the north have long seemed to conspire to tear off the "bare, bended arm" of Massachusetts, as Thoreau called Cape Cod, we come to the Cape Cod Canal. According to British charts in the Library of the United States Coast and Geodetic Survey, thought to date from 1715, there was once a sea-cut channel through that neck, and Cape Cod was an island, not a peninsula. Here, again, the land won out in after years and tied an island to the mainland.

ICE AS A LAND ALLY

The Cape Cod Peninsula affords an illustration of how the ice in geologic times came to the aid of the land in its war against the sea. Once glaciers swept down from Labrador and Maine and deposited vast quantities of clay and boulders on the floor of the sea, making a great breakwater to the east of what is now Cape Cod Bay. This obstruction forced the sea to give up the stores of sand it was carrying, and with this material the breakwater gradually wrought itself into a peninsula.

Passing around Cape Cod's two shore-lines, inner and outer, one comes next to Chatham, at the elbow of the outer shore. Here the sea is once more on the offensive, driving forward into the shore-line at the rate of a foot a year.

South of Chatham is Monomy Point, called by De Monts, the French explorer who nearly came to grief there in 1605, the "graveyard of ships," a reputation it has lived up to for three centuries and better. Looking southward across the



Photograph by George R. King

WHERE PRISONERS OF WAR ARE FORCED TO FIGHT THEIR BRETHREN

A typical sector near Highland Light, Massachusetts, where the sea enemy uses captured boulders, torn from cliffside defenses, as projectiles with which to batter down the ramparts. Note the prisoners "left upon the wire" at the beachline.

eastern entrance to Nantucket Sound, one sights Nantucket Island in the distance. On the south side of this island the retreat of the cliffs is often as much as six feet a year.

Further to the west lies Marthas Vineyard, also an outpost of the land. Here there are rearing ramparts of rock a hundred feet high, but even they cannot entirely withstand the incessant attacks of the indomitable sea.

To the southwest of Marthas Vineyard lies the desolate island of "No Man's Land," which is well worthy the name it bears. Gradually the sea is tearing away its vitals, and it is predicted that by the end of the present century it will disappear beneath the waves forever.

In the case of the Cape Cod Peninsula, we saw how the land had used the ice of geologic times as its ally against the sea, but when we come to Long Island



AN OBSERVATION POST ON THE FIRING LINE

The sea makes a desperate attempt to gain a foothold near Portland Head Light, Cape Elizabeth, Maine, but with little success

there is a different story. Here the ice negotiated a separate peace with the sea, and, sweeping eastward across New York, scooped out what is now Long Island Sound, thus enabling the enemy to isolate the island entirely from the mainland.

WHEN THE LAND ASSUMES THE OFFENSIVE

On the south coast of Long Island we find beaches and shifting sands. Here again we get into more hopeful territory, for the land always has an upbuilding Oliver for every down-tearing Roland the sea may have to offer. From Shinnecock Bay to Fire Island, a rampart of sand some 40 miles long has been thrown forward off the real shore-line, and the sea, pounding against this in its maddest fury, encounters a buffer that throws it back a helpless and exhausted foe. Moreover, the sea is compelled to surrender captive sands taken up elsewhere, and

these are re-equipped and put into the front trenches of the island's south-shore defenses.

Farther west on Long Island lies Rockaway Beach, the advanced line of defenses which the land has been throwing out to thwart the attack of the sea at the apex of the Jamaica Bay salient. What was once Pelican Beach has all but disappeared and what is left of it is now known as Barren Island. But Rockaway Beach has gained ground westward as fast as Pelican Beach has been driven eastward, and has now all but landlocked Jamaica Bay and its islands. It advances at the rate of two feet every three days.

SANDY HOOK AN ADVANCE GUARD

On the Jersey Coast, Sandy Hook stands out as an advance guard of the forces of the land, determined to cut through the line of communications of the sea in its drive into the Raritan Bay salient (see map, page 533).



Photograph by H. C. Mann

A "TANK" ADVANCING OVER A FOREST

Sometimes, when the wind acts as an ally of the land forces, a heavy tribute is exacted from the sea, from which huge sand ramparts are builded. Often these dunes, like great "tanks," become insubordinate and march inland, engulfing forests and villages en route.



Photograph by William Reid

"STAND TO ARMS"

There is little rest given the grim defenders of such a salient, for here the enemy force their prisoners, torn from cliff and beach, to advance with them in the wild assault



Photograph by H. C. Mann

MOONLIGHT ON THE BATTLE-FIELD

Between the tides of attack a brief truce takes place between these world-old antagonists, but, as is the case in any undecided war with an unscrupulous enemy, it only means time in which to prepare for further attack at a later hour.

When there is a deeply indented coastline, the ocean currents paralleling the shores refuse to follow the indentation and cut straight across. Striking deeper water, they slow up and deliver from bondage the captive grains of sand which momentum has enabled them to carry along.

Eventually these grains grow into a high submarine ridge, which holds up the onrushing waves and forces them to give up a sand toll as they pass. Having gained courage in its size, the ridge makes a sally from the surf and becomes a full-fledged spit, or hook.

Sandy Hook is a splendid example of this method of the land in invading the dominions of the sea. It very frequently happens that the spit marches on until it reaches across the bay area and captures the entire water army within the salient. Then science decorates it with a *croix de guerre* and gives it a new name—it becomes a bar.

The captured waters of Tisburg, Oyster, and Herring ponds, on the southern shore of Marthas Vineyard, afford an excellent example of the conquest of the sea by a spit. But the fortunes of war often change, and the Marthas Vineyard Bar, once forcing a retreat of the open sea, is now in turn being driven steadily back. It is believed that the coastal edge at this point is a thousand feet from where it was when first seen by a white man.

WHEN THE SANDS ARE LED CAPTIVE

The Jersey coast is full of classic examples of the war between the land and the sea. Here are no towering ramparts, with frowning walls, that seem to defy all the armies with which General Neptune can attack them. Nay, rather, here the land forces have camouflaged their strength, and have entrenched themselves behind barriers of sand.

At Long Branch one may watch the shifting fortunes of the battle. Here, in spite of the most elaborate system of breakwaters man has erected, the shoreline is being led captive inch by inch. But the prisoner sand does not remain in captivity. As it is being escorted back of the lines it makes a successful dash for liberty and rejoins other land units north

and south of Long Branch and aids in a counter-attack in those neighborhoods.

It is hard to visualize the full meaning of the conflict's swing until one views the battle-field from the observation tower of history. A few feet won or a few feet lost in a year seem insignificant. But generations are merely short-lived seconds ticked off on the clock of geologic time, and one needs the sweeping view of centuries to appreciate it all. On the New Jersey coast we get a little of that.

Prior to the War of 1812, Old Cranberry Inlet was one of the best havens of refuge on the eastern coast. It was a safe harbor for American privateers lying in wait for enemy commerce. But one night the sea made a heavy concentration of forces and staged a night attack of particular fury, broke down the defenses, and shifted the whole channel a mile to the northward.

SHIFTING OF LAND RESERVES AT ATLANTIC CITY

In the vicinity of Atlantic City the sea is ever striving to gain a foothold; but at present the best it can do is to force a shifting of land reserves from one side of a salient to another. In a few years it took off some 76 acres of ground from the neighborhood of Maine Avenue and forced most of it around to the lee of the point at Ohio and New Jersey avenues.

The pounding power of the waves when the sea is staging one of its major attacks is hard to picture by those who have visited the front-line trenches in bathing suits and have seen only a quiet sector. But when the breakers rush forward at a height of 10 feet or more, in serried ranks, striking from four to six majestic blows a minute, one does not wonder more at the vastness of the sea's reserves than he does at the land's powers of resistance.

SUBMARINES EMPLOYED BY THE SEA

The sea is thoroughly modern in its methods of warfare, even employing the submarine. As the waves sweep inward and break upon the shore, their waters must have some egress back to the deep. If they tried to go back as they came they would create confusion in the onsweeping forces behind them. To obviate this,



Photograph from J. E. D. Graves

A ROYAL BATTLE-GROUND: ORMOND-DAYTONA, FLORIDA

Here the White Horse Cavalry of Neptune make a charge twice daily over the most perfect beach in the world, from three to five hundred feet wide, on a front of about thirty miles. "The Silver Sands of Ormond" is no empty figure, because for ages the shells of the coquina clam have been ground under the heels of Neptune's charging horsemen until they have become fine sand. As soon as the foam-flecked forces fall back, the silvery sand settles down into a surface as level as a floor and almost as hard as asphalt, making one of the finest automobile speedways in the world, which is always kept in order by the tides.

they submerge and return along the bed of the beach. Here they constitute the undertow, an undersea current equally as reckless of life and the rights of noncombatants as a Hun U-boat itself.

It is by this route that they lead off many of their prisoners and drown them beneath the waves of the sea. Ten thousand banks on the bottom of the deep are cemeteries peopled with the worn and wasted sands of the seashore which were carried there by the undertow.

If the sea in its warfare against the land sometimes ruins a haven of refuge, as it did when it broke through the lines of the land at Old Cranberry Inlet, previously cited, at other times it is compelled by the land to create such a haven.

Off the Maryland-Virginia shore lies the long, barrier-like island of Assateague. Once the seaward southern point of this island was only a bare lip. Gradually, however, the land began to force the sea to give it sand, and with this it has built a fine hook behind which many a mariner seeks safety from the fierce nor'easters that sweep these coasts.

From 1908 to 1911 this invasion of the sea by the land went forward at the rate of 200 feet a year. But latterly it is following the usual course of offensives and is now advancing at the rate of only 100 feet a year.

ANOTHER ALLY OF THE SEA IN THE VIRGINIA CAPES REGION

When one comes to the Virginia capes and studies conditions there, it is found that in times past the sea had another ally, of which no mention has yet been made—subsidence. In a bygone age the Susque-



Photograph by James Burton

ON THE WIRE: NO MAN'S LAND. WHAT SOMETIMES HAPPENS WHEN MAN DEFILES THE WARRING ELEMENTS

The sun is munition maker for the sea. Every day it sends to the earth enough heat to melt a cake of ice 5,000 feet thick and as large as the State of Massachusetts, as much heat in an hour as the fires of all Christendom have produced in a thousand years. This heat is the high explosive that puts the fury into the storm that drives the projectile waves to the attack.



BARRAGE FIRE

Photograph by William Reid

Again and again the regiments of the deep advance to the attack with the wind ally behind them to whip the wave crests into stinging spray



SUNRISE NEAR NORFOLK

The quiet waters of Norfolk's harbor have for nearly a century proved a welcome haven to ships from every out-of-the-way corner of the world; here the antagonists of the universe seem to have established a sort of unspoken peace

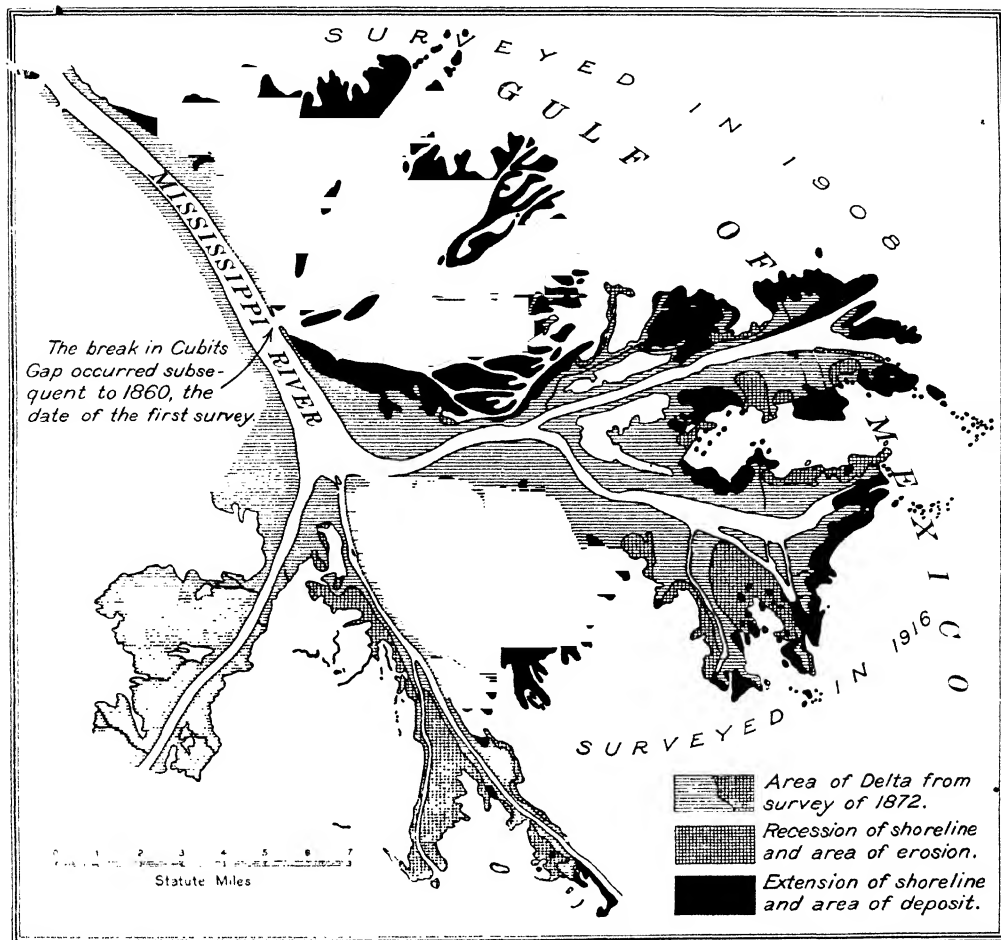
Photograph by J. Manning McLeod



Photograph by H. C. Mann

A CAMOUFLAGED TRENCH

The enemy's thrusting-point is frequently changed and heavy artillery is superseded by strategy, during which period the land regiments endeavor to strengthen their fortifications by utilizing plant life to cement their trenches



SKETCH MAP OF THE MISSISSIPPI DELTA SHOWING FORMATIONS

hanna, the Potomac, and the James rivers rolled in stately grandeur to the sea. Then there came a subsidence, and the sea rushed in through the reach between Capes Charles and Henry and overwhelmed the land in all that vast area we call Chesapeake Bay.

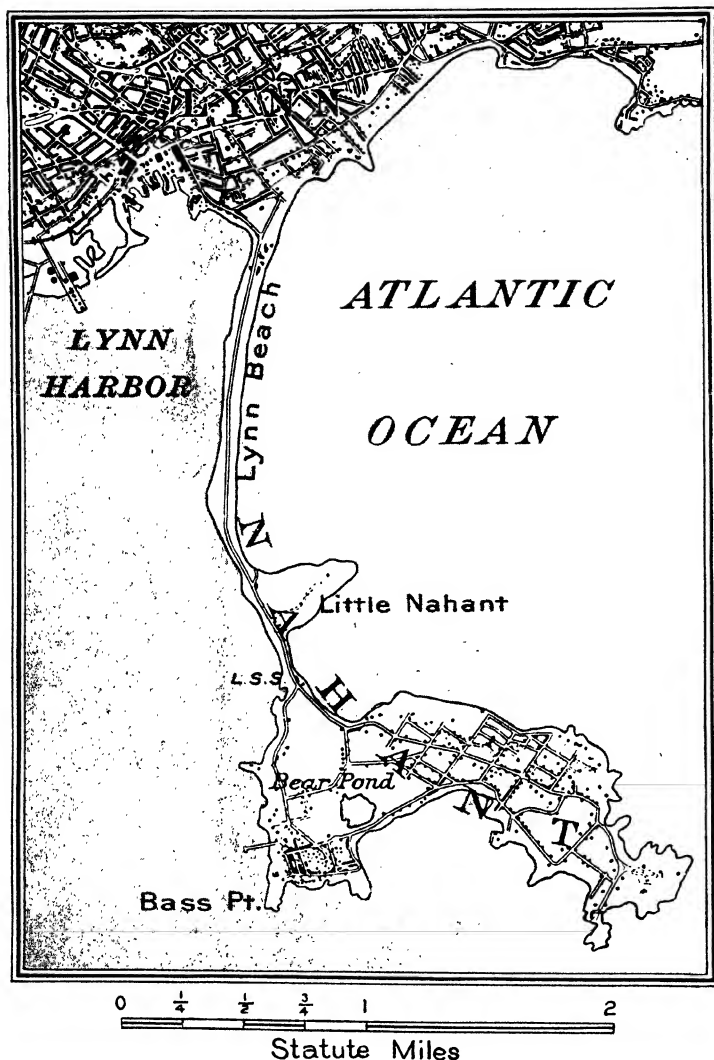
The land has not always been without an ally to counterbalance this display of strength. Sometimes there come upheavals of the floor of the sea that drive the water into a retreat which often becomes a rout.

The consequences of even a slight upheaval may be strikingly shown by following what is known as the twenty-fathom line off the eastern seaboard. This line divides the sea into two parts, that which is less than 120 feet in depth,

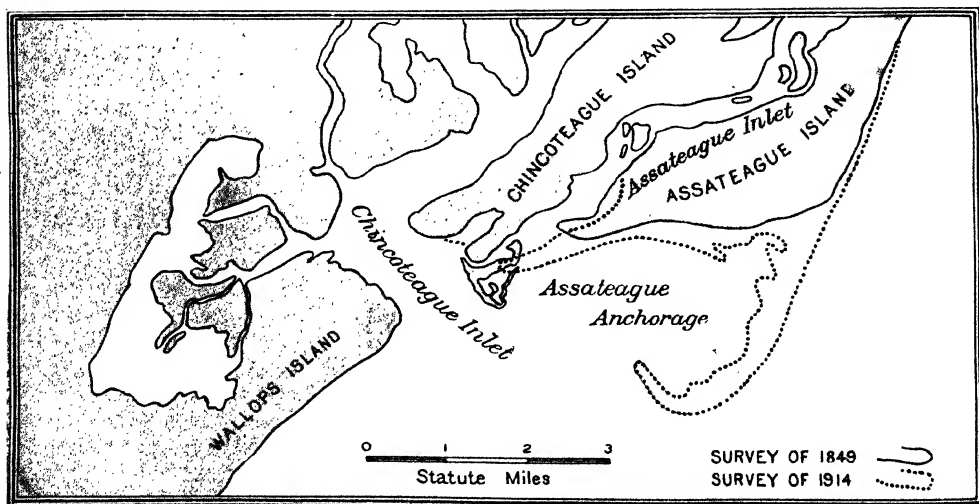
and that which is deeper. Were the floor of the continental shelf, the vast, under-sea platform upon which the continent rests, to rise 120 feet, Delaware Bay, Chesapeake Bay, Albemarle Sound, and all the other deep indentations of our coast would disappear and the new battle line would be practically without salients.

WHEN THE LAND SCORES A VICTORY

When the land is victor, through an upheaval, it always straightens out its battle front. The bed of the sea, being untouched by the chemical changes of the atmosphere, unharassed by running water, but constantly graded by deposits of sand in its low places and scoured by the tides in its high ones, is ever tending to assume a common level.



WHERE THE LAND HAS SCORED SIGNAL VICTORIES OVER THE SEA; THE UPPER CHART SHOWS LYNN HARBOR (SEE PAGE 521); LOWER CHART IS A SKETCH OF ASSATEAGUE ISLAND, VIRGINIA, SHOWING LAND DEFENSES BUILT SINCE 1849 (SEE PAGE 528).



On the other hand, the land, attacked by chemical change, eroded by wind and running water, is an unending succession of elevations and depressions, and whenever there is a subsidence the sea seeks out every foot of ground below its level and occupies it.

Only the highest waves ever lash the sea bottom beyond a depth of 26 feet, and at 600 feet even the ripple-marks of a gentle surge disappear.

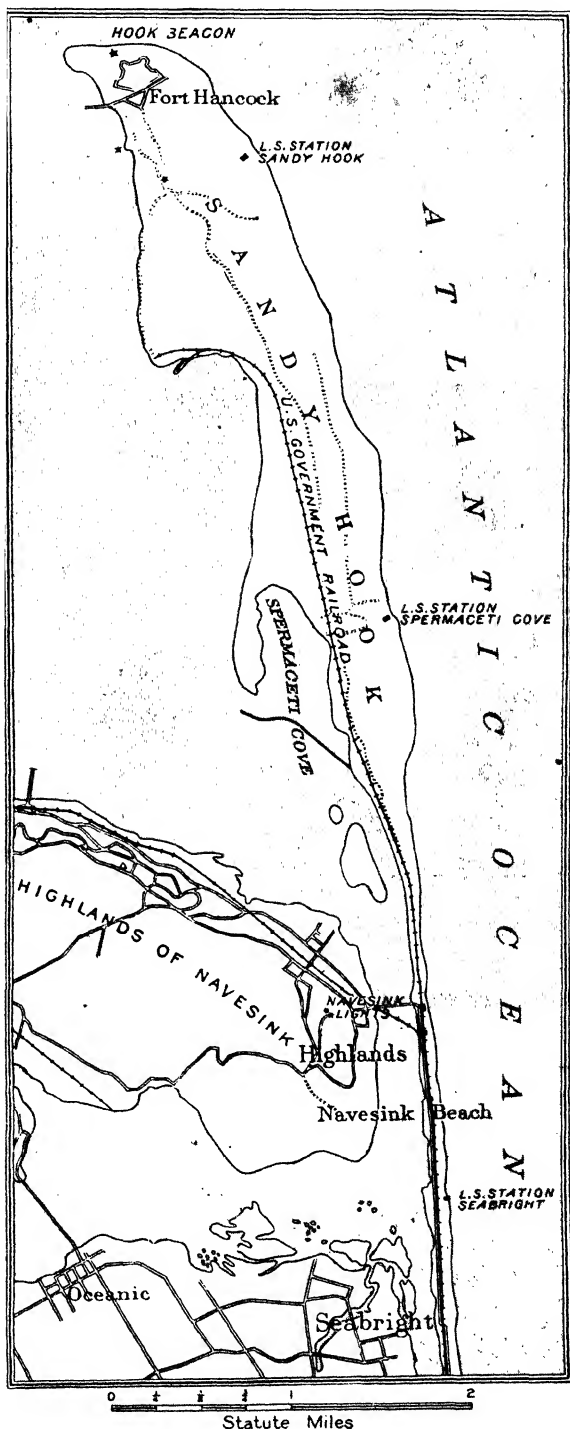
THE WINDS A BOLSHIEVIK ARMY

From the Virginia capes southward, one may see the same forces at death grips that are found on the Jersey and other coasts. But neither at Cape Cod nor in Jersey will one behold to such advantage the rôle played by the wind, the Bolshevik of the land and sea war, as in the region of the kingly capes and in the vicinity of Hatteras. Now it boldly marshals its forces alongside those of the water and urges on the attack with the utmost abandon. And now, repentant of that rôle, it steps in and helps the land erect great barriers of sand, against which the wildest sea, in its maddest moments charges in vain.

The winds are the makers of dunes, the tanks in nature's war-

SKETCH MAP OF SANDY HOOK

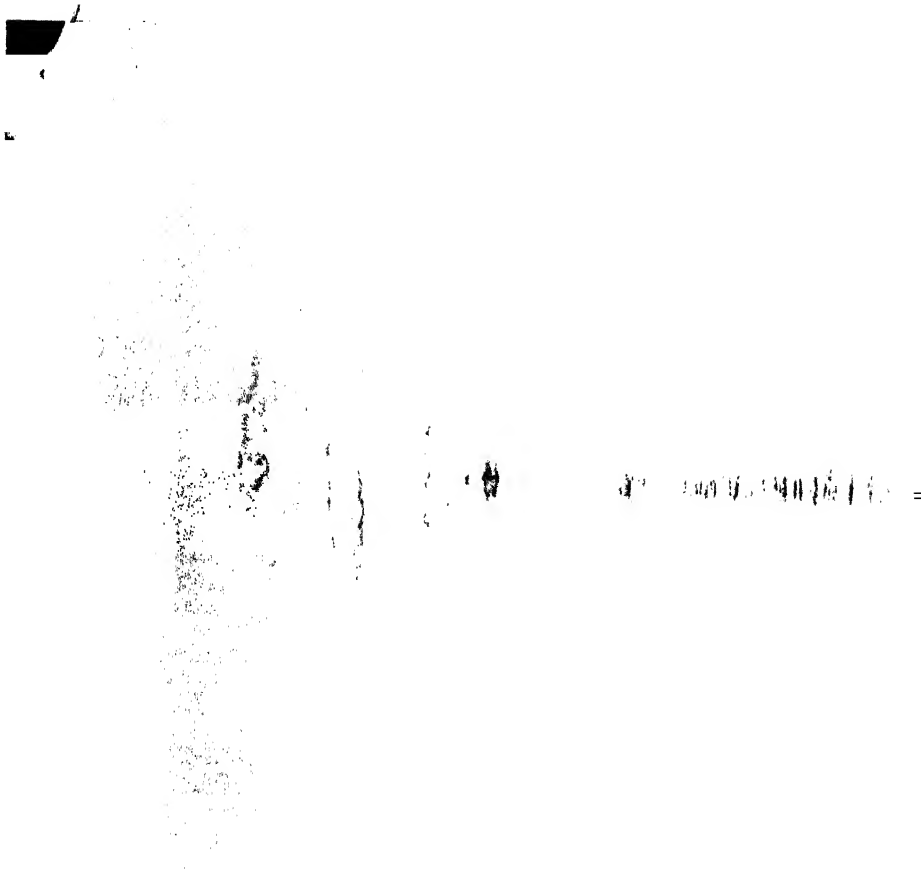
A little south of Sandy Hook, at Long Branch, the highlands yield a continuous supply of sand to the action of the waves. This is washed up and down the beach with each advancing and retiring wave, but with each movement it is brought down to a place northerly of where it started, as the waves strike the shore obliquely and from a southerly direction. So the sand is carried along until it is deposited in deeper water, where the wave action is not so vigorous, gradually building up the bottom in much the same manner as a delta is built up at the mouth of a river. Sandy Hook is the result of this action aided by the winds which blow the wave-brought sands into dunes.





© H. C. Mann

THE SEA ATTEMPTING TO ESTABLISH A COMMUNICATION TRENCH ON THE FRONT LINE OF BATTLE IN THE VICINITY OF CAPE HENRY, VIRGINIA



WHERE THE LAND ARMY HAS FORCED PEACE: A PROTECTED HARBOR IN SOUTHERN WATERS
=

Photograph by H. C. Mann

fare, and the humble beginnings of these mountains of glistening sand form a remarkable story. One who has stood on a sandy beach during a lashing hurricane and has felt the shining grains hurled into his face with a sting like that of a nettle, knows the wind's power and can the more easily believe the statement of scientists that a cubic mile of churned air may contain thousands of tons of sand.

Anything of substance, from a piece of wreckage to a tuft of grass, may be the nucleus of a dune that will grow and grow, broadening out as it rises higher, burying a forest, engulfing a house, or wiping out an orchard.

The trees which the sands seek to overwhelm put up a stubborn fight for life, but usually the dune is victor, and many are the places where one may walk through a graveyard in which a forest lies buried and only a limbless upper trunk has been left as a ghost of a brighter day.

Sometimes dunes migrate and the forest that was buried yesterday awakes to life tomorrow, for the wind picks up the sand it formerly laid down and drives it still further. Cemeteries have been first sheltered by a dune, then buried by it, then resurrected from it. On the Carolina coast a human graveyard has been despoiled by the shifting sands, and as the dune moved onward in its migration the very graves were opened by the force of the wind, and the bones of those who peopled them were left scattered on the soil.

WARFARE ALONG THE FLORIDA KEYS

The Carolina coast affords a striking example of the effectiveness of the wind as an ally of the land. Borne southward by the sweeping shore-following currents that come down from the north, sands that are the remains of boulders pounded loose from some rocky coast, have driven a wedge through the left flank of the ocean and have completely isolated the attacking armies holding the salients of the Albemarle and Pamlico sounds.

The winds have aided in the campaign and have piled up veritable mountains of sand against future attacks by the sea. Thus the main battle line is straightened out and the enemy finds itself in a cross-

fire, with opposing forces athwart its line of communications.

Along the southeasternmost coast of Florida, from Cape Florida, which guards lovely Miami, on down to Key West, is the beautiful key region, where the coral polyps have established foundations upon which the land has been able to build first-line defenses that break up the assaults of the sea before they reach vital ground.

Sometimes the water erects wonderful natural bridges in these barriers. On the western shore of the northern part of Biscayne Bay, which laves the shore of Alton Beach on one side and Miami on the other, a little river escapes from the Everglades to the elevated Barrier Reef through a beautiful rock arch cut by the water.

MAN AS A PROFITEER IN NATURE'S WAR

Thus having, with some little romantic license, outlined for the nontechnical reader the front-line trenches of nature's great war on our eastern coast, let us turn aside and see how man, the innocent bystander, the neutral, fares through it all.

In the attack of the sea via the air he is preëminently a profiteer. Without the water and atmosphere to weather the rocks of the mountains he would have no soil upon which to live, and without the rain that gladdens valley and plain the soil would be worthless.

But when it comes to the frontal attack he has to resort to many measures to maintain his neutrality and to prevent both belligerents from encroaching upon his domain. With his Lighthouse Service he warns the mariner of dangers ahead and directs the fleets of main and inland waters into safe channels. With his Coast and Geodetic Survey he plots the pitfalls and the safe shipways, so that the sailor may set his course without fear. With his Coast Guard he stands unending watch to help those who, in spite of all care, become entangled in the barbed wire of nature's battle-fields and would perish but for its timely aid.

BEACONS THAT GUARD THE NEUTRAL'S RIGHTS

The most easterly light on the shores of the United States is that of West

Quaddy Head. From there to the southern tip of the Florida coast there are scores of beacons of the sea, some with histories that warm the hearts of those thrilled by deeds of heroism.

The one at Mt. Desert is on a bold promontory where the pounding waves break high, and have been known to lash so fiercely that they moved a rock, estimated to weigh 75 tons, a distance of 60 feet during the fury of a single storm.

The Matinicus Light has a thrilling story to tell. Once the sea made a complete breach in the rock. Only the women-folk of the keeper's family were there when the storm broke, but little Abbie Burgess, fourteen, and her sisters stood up bravely against Neptune's outburst, and for four weeks kept the light aglow, although during that entire time there was not a moment when the government keeper, their father, could effect a landing from the near-by mainland.

The Minot Ledge light, standing far out on a lone rock, where the sea rounds Cohasset and speeds into Massachusetts Bay, has a striking history. For three years men worked like Trojans to build a lighthouse upon a barren rock. Its beacon flared forth for the first time January 1, 1850. A little more than a year later, in April, 1851, a great gale swept those seas. On the night of the 16th the light was last seen from Cohasset at 10 o'clock, and the bell was last heard an hour after midnight. When morning dawned it was gone.

But that tragedy only temporarily dimmed the light of Minot Ledge. A few years later the government completed the present massive stone structure, ranking among the greatest of the sea-rock lighthouses of the world because of the engineering difficulties surrounding its erection. A considerable part of the foundation was below low water, and landings could be made only at low spring tides in a smooth sea. Work was prosecuted for three years before one stone could be laid upon another. No man who could not swim was employed, and no landing from a boat was attempted except when convoyed by another boat. A surf boat manned with three lifeguards was kept constantly on duty while the workmen were on the ledge.

THE NANTUCKET LIGHTSHIP

It would be interesting to recount the stories of Cape Cod light, and of the lightships that mark the passage through the shoals off Cape Cod and through the sounds to Buzzards Bay. But whoever thinks of lightships, thinks first of Nantucket. Mr. George R. Putnam, chief of the Lighthouse Service, in his excellent book, "Lighthouses and Lightships of the United States," tells this story of the Nantucket lightship:

"On a voyage from Europe the weather had been such that the steamer had crossed the Atlantic without the officers having secured a single observation after leaving the Irish coast. A passenger came on deck on a misty evening and heard first faintly, and then louder, the blasts of a steam whistle at regular intervals of half a minute. Then through the thin fog a white light eclipsed every quarter of a minute, and there soon loomed out of the mist in the dusk a little vessel at anchor, rolling heavily in the swell, with a red hull, and *Nantucket* in large white letters on her side.

"The great liner swept by and on toward her port, for then it was that her master had definite knowledge that he was 200 miles east of New York harbor. This lightship, anchored on one of the most exposed stations in the world, has given this message to many thousands of captains and has been the first signpost of America to millions of passengers."

WITHSTANDING THE SIEGE GUNS OF THE SEA

The Nantucket lightship is anchored in 30 fathoms of water, 41 miles from the nearest land, Nantucket Island. She is 135 feet long, with full propelling power should she part her cables. She has a crew of 15, a submarine bell, and a wireless outfit.

When the sea brings up its siege guns and heavy artillery is the time of all others for the lightship to be on its station. It must wallow in the trough of the sea as best it can and ride out the storm at a standstill, lest some hapless master get caught in the drumfire of a terrific offensive.



© Charles A. Harbage

OVER THE TOP

Trained from childhood in sea-lore and surf-boarding, there are no better boatmen in the world than a coast-guard crew. Launching or landing through a heavy surf require superb skill, keen judgement, and much courage. The lack of any of these requisites spells almost certain disaster—a capsize if nothing worse.

Heading inward to New York, one might tell of the Fire Island Lightship and Ambrose Channel Lightship, the latter marking the beginning of the "run" to Europe and the end of the "run" to America.

Navesink light, built on the highland of the Jersey coast just below Sandy Hook, with its seven-ton bivalve revolving lens of the lightning type, has an estimated candle-power of 25,000,000, which makes it the most powerful light in America, if not, indeed, in the whole world. The curvature of the earth cuts off its direct rays at 22 miles, but its beam has been observed in the sky to a distance of more than 80 land miles.

There is many an inspiring tale of the sea connected with Barnegat light, Absecon light, the lights that proclaim the capes at the mouth of the Chesapeake, and others to the south.

Cape Hatteras light has the distinction of being the farthest distant from the main shore of all American lights, and it is also the tallest lighthouse in the country. Spiral-painted like old-fashioned stick-candy, it is visible for many miles amid the storm-tossed waters of the North Carolina coast.

Off Hatteras there is a lightship that for the high seas and dangerous storms it must ride out is a rival of Nantucket vessel. It is the Diamond Shoals lightship.

Beyond Hatteras there are numerous great lights along the Dixie shores, each with an interesting history, each with a long record of service performed in warning craft to steer clear of the fighting zone between the water and the land. They, as well as gas buoys, fog signals, and many other warnings and guides to shipping while in the battle area, invite attention.

THE COAST AND GEODETIC SURVEY, THE WAR CORRESPONDENT

But however attractive their story, they must stand aside while some account is given of the work of the Coast and Geodetic Survey, which is ever a neutral war correspondent at the battle-front, chronicling every change in the battle-line and keeping its position up to the minute, lest shipping run upon a new bar without

warning. With its ably-manned surveying vessels it journeys up and down the battle-front with an eye always out for shore changes, dangerous shoals, and such. Every skipper who sails the main may thus know where the mine-planters of the briny deep have been at work, and can steer clear of such fields.

WEARERS OF THE CROSS

In spite of all the warnings of light and bell and buoy; in spite of surveys and charts and mapped battle-fronts, there are still ships that will get into the danger zone and fall victims of the heavy artillery that sweeps the seas between deep water and the dry land. Shall they be left to perish with their crews and cargo? Not if the helping hand of Uncle Sam's coast guard can rescue them.

What tales these Red Cross men of the turbulent seas could tell! What hardships they endure! What perils they brave! To them the cry of distress in a storm-tossed ocean never goes up in vain. No bombardment of Neptune is ever so fierce that they will not dare it, no hope of a timely rescue is ever too slight to spur them on. The raging battle might as well be a blissful calm, for all its power to turn aside the life-savers from their stern duty. Aye, they may sink beneath the waves themselves, but to them even such a death is a lot infinitely preferred to life with an unheeded call from out the angry sea as a memory.

No one who has ever watched the sturdy life-savers man the lifeboat on an exposed shore and, against odds that seem insuperable, pull gallantly out into the tempest, can fail to appreciate either the stoutness of heart or the grandeur of purpose of these men. Where seemingly no boat could live, they manage to breast the storm, ride the billows, and reach the stranded vessel.

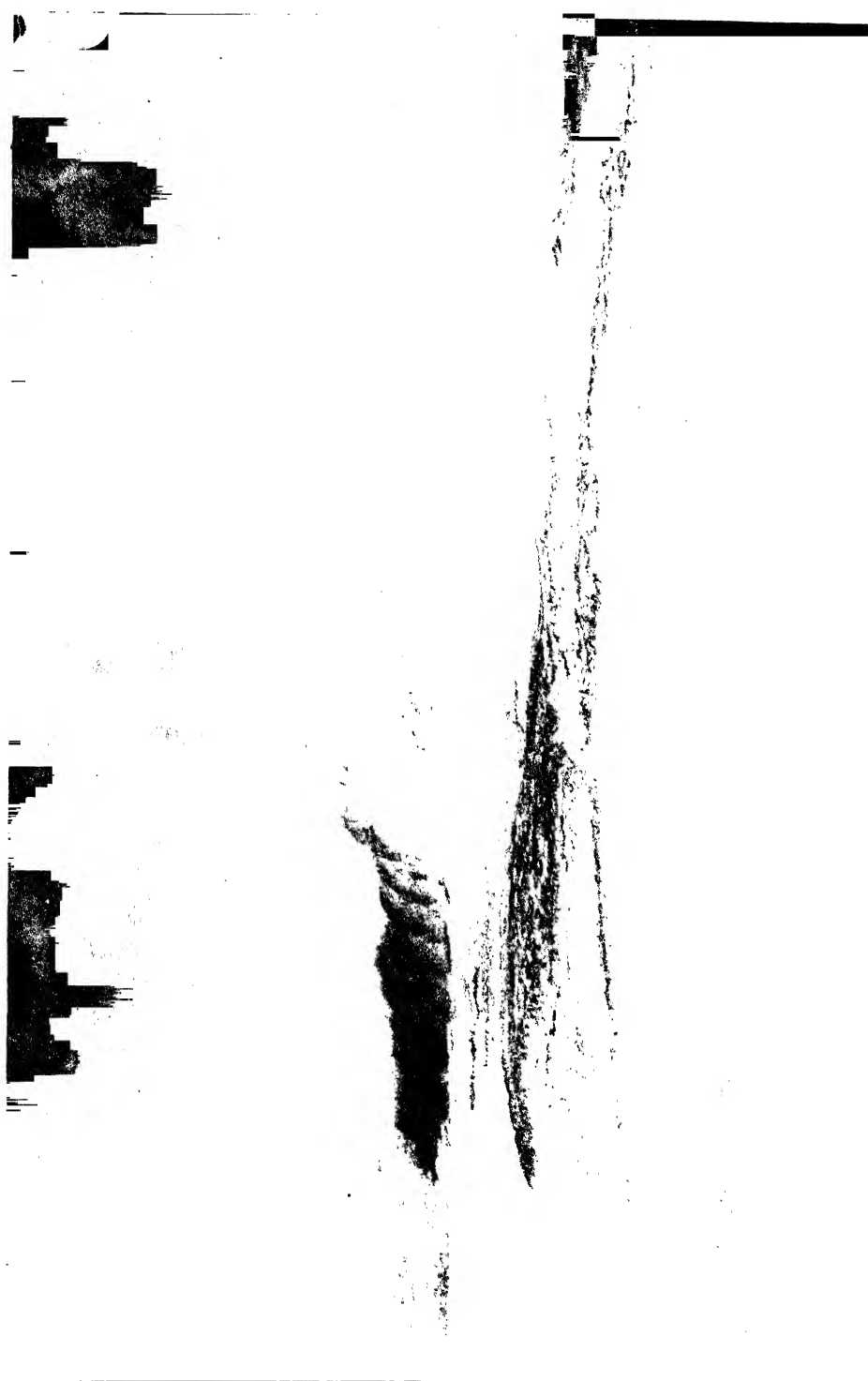
With a record of 1,500 instances of the rescues of lives and ships in a single year, it would seem invidious to single out one over another. A Sandy Hook station not long ago answered five calls in one day.

A Rhode Island station some time later saved 71 persons from the Portuguese brigantine *Est Thiago*. That vessel went



Photograph by George M. Chafin

AN ANCIENT BATTLE-FIELD: THE SAND-DUNE RAMPARTS OF SOUTHERN FLORIDA



Photograph by William Reid

• A MASS ASSAULT

As the seas retreat after an unsuccessful attack, they carry along in their flight many prisoners, wrested from the land army, that are never to be set free or exchanged



Photograph by George M. Chapin

AN OUTPOST OF PALMS STANDING GUARD AGAINST AN ATTACK OF THE SEA ON THE SOUTHERN FLORIDA COAST

ashore in a fog and was totally lost. A heavy surf was running when the brigantine struck, making the launching of a lifeboat to the rescue an exceedingly difficult and perilous undertaking. Moreover, the state of the sea, once a launching was effected, was such that a boat could not run alongside the vessel. Her masts were gone, some of the planks of her port side were missing, her starboard rail was under water, and debris was thrashing around everything on board as well as over the side.

Both crew and passengers were in extreme jeopardy, and in great panic were calling for help. The commander of the lifeboat watched his chance and in the brief period between seas ran in under the flying jib-boom. Following his directions, those on board crawled out on the boom and dropped into the boat.

The rescuers did not risk stopping long under the boom—only long enough at a time to get three or four persons. The time limit of safety reached, they would scud away with all speed, to avoid being swamped or capsized by a breaking sea.

WORK OF THE COAST GUARD CUTTERS

Nor can one overlook the coast guard cutter and its work. Under presidential orders, about a dozen of these vessels patrol assigned sections of the coastal waters from Eastport, Maine, to Cape Canaveral, Florida.

Provided with liberal supplies of food, water, and fuel, they put out to sea and cruise throughout the long winter months, ever vigilantly looking and listening for vessels in distress and for opportunities to be good friends in an hour of dire need.

One cutter covers the district between Great Egg Harbor, New Jersey, and Cape Hatteras.

The heavier the blows being struck by the sea the greater the need for these cutters to be on the watch. Ships aground, afire, in a collision, indeed any S. O. S. sends the cutters full steam ahead to the rescue. Now it may be a schooner, like the *Frederic A. Duqgan*, in distress some 50 miles east of Nantucket Lightship, loaded with China clay, from Cardiff half full of water, her provisions gone and her bottom so foul that only

a gale could give her headway. Now it may be the *Bay State* on the rocks of Hollicom's Cove, Maine. Now the *Antilla* sends out an S. O. S. call that she is afire 120 miles east of Norfolk, and the *Onondaga* rushes to her rescue, and, finally, with other help, gets her into port, her cargo a total loss, but the ship saved. Or it may be the transport *Sumner*, which lost her bearings in a fog December 11, 1916, and went upon the rocks of Barnegat Shoals.

RED CROSS STATIONS

In viewing the Atlantic seaboard, one finds that the opposing forces in nature's unrelenting campaign have at least paused long enough to cooperate in the foundation of Red Cross stations in neutral territory. From Maine to Florida they have established, by mutual agreement, waters in which peace prevails—harbors where fleets may find haven while awaiting call.

Few stretches of coast line in the world have more of these stations. Maine with its Eastport, Belfast, Rockland, and Portland harbors; New Hampshire with its Portsmouth harbor; Massachusetts with the harbors of Newburyport, Gloucester, Salem, Lynn, Boston, New Bedford, and Fall River; Rhode Island with Newport, Providence, and Bristol harbors; and Connecticut with those of New London, New Haven, and Bridgeport, give New England many such bases of first importance.

Between the western nose of Long Island and the eastern projection of Staten Island, New York is given a harbor with an outlet that justifies its name of "The Narrows." Beyond lies the Upper Bay and above that the deep waters of the Lower Hudson and East River, giving the city more potential water front than any other municipality in the world. New Jersey has little to offer in harbors of first importance, except the one it shares with New York and those on Raritan Bay; but it joins with Delaware in forming Delaware Bay, with its ocean outlet for Philadelphia.

Further down the coast the land sank and invited the waters in through the Virginia capes to form harbors at Baltimore, Norfolk, Portsmouth, and Newport News. At Wilmington, N. C.; Charles-

ton, S. C.; Savannah, Ga.; Jacksonville and Key West, Fla., are Red Cross stations of the first order, all directly or remotely built up by mutual consent of the warring elements, so that man, the innocent bystander, can seek safety when the front-line trenches become untenable for visitors.

THE SEA DOOMED TO DEFEAT

Such, briefly told, is the story of the great effort of the sea to bring the land under her dominion.

It is a warfare that has its lights and its shades, its tragedies and its joys. Furthermore, it is a warfare with striking analogies to the great conflict of democracy against despotism, and just as surely as the upheavals that raised the Piedmont plains above the sea drove the ocean back and set the American continent firm and strong, so will democracy rise up in its power and successfully vanquish its foe, however subtle, however persistent, however relentless that foe may be.

PRUSSIANISM *

BY ROBERT LANSING, SECRETARY OF STATE

THE American people by a gradual process of reasoning have reached the firm conviction that a German victory in the European struggle would result in the greatest of perils in this country and to those principles of government which have been ours since we became an independent nation. Whatever may have been our past judgments, we now realize the sinister character of Prussianism which has been manifested in this war.

And yet, with this realization of the truth, I find that many Americans, even among those intellectually equipped, have but vague ideas of the perverted mental attitude which made Prussianism possible, and of the reason why a compromise founded upon the Prussian conception of international rights must not even be considered.

THE RELATION OF PRUSSIANISM TO PEACE

To a man who thinks true in these days when passion or hysteria distorts opinions, Prussianism and the idea of an enduring and just peace among nations can never be brought into harmony. They can no more mingle than can oil and water. They are at the very antipodes of human thought. We should, then, comprehend the true meaning of

Prussianism in order to understand the great obstacle today to a return to peace while Prussianism is still a power.

In considering the elements of Prussianism which made this war inevitable, we should also consider the relation of Prussianism to peace, the supreme desire of mankind, and its relation to war with all its suffering and destructiveness. The wastes of western Europe, the ships and corpses in the ocean's depths, the forest of crosses marking the graves of slaughtered men, the legions of torn and crippled humanity, and the wretched throngs of unhappy women and children are sad witnesses to the horrors of war. On these spectacles of brutality, misery, and desolation all civilized peoples gaze with anguish and bitterness.

As there comes an increasing realization of the needlessness of it all, indignation and anger burn in the hearts of men. But in spite of the bitterness aroused by these tragical scenes, they hope for peace, they pray for peace, and they look forward to that day when rest will come to this tormented world which has endured so much.

Yet, even as they hope and pray and search the future with yearning eyes, the armies and navies of democracy sight on with a grim determination which seems to contradict the hope and purpose of humanity.

* An address to Union College, June 10, 1918.

Peace the world may seek with passionate longing, but not a peace which contains the seeds of future wars and future suffering. When an end comes to this great war, as it will come, it must result in a peace that is final and enduring.

"AN UNSTABLE PEACE WOULD BE A CURSE"

Surely mankind has not borne this burden of agony for naught. After all this woe and waste, a temporary and unstable peace would be a curse rather than a blessing.

A firm foundation must be found and is to be found in the frank and clear declaration by President Wilson of the aims which the Republic seeks in this war and which, with God's help, it will attain, whatever the cost may be. Nothing less will satisfy the American people; nothing less will content the democracies of the world.

The conditions which prevailed prior to August, 1914, produced this conflict. It is not, then, in a return to the *status quo ante* that lasting peace is to be found, though that, with domination of the Slavic peoples on their eastern borders, appears now to be the minimum terms of the Teutonic powers. To restore those pre-war conditions would be to invite a new disaster. Peace must rest on a more substantial basis, for the world seeks to have done with war and with conditions which produce war.

However long it may take, however great the sacrifice may be, physical might uncontrolled by morality must never again be considered a standard of international right. Justice must and will become the supreme force in human affairs. No other result will insure civilization against the evil passions which today convulse the earth.

THE BLOOD OF THE BRAVE NOT SHED IN VAIN

I do not believe—in fact, it seems to me to be unbelievable—that the blood of brave and devoted hearts, so generously poured out on land and sea in the cause of liberty, is being shed in vain, or that the vast treasures, wrested from the earth by man's enterprise and industry,

are being wasted in the support of so sacred a cause.

But these lives and these riches have been wasted unless from the ashes of these sacrifices, which have been offered on the altar of liberty, there arises a peace which shall endure. It cannot be that the merciful Ruler of the Universe has permitted humanity to suffer all this without conferring a lasting blessing.

The conditions which brought on this war are rooted in the past and are not of sudden or spontaneous growth. They are the natural development of influences which have been long at work in Prussianized Germany and which the rest of the world ought to have perceived, but did not.

We can now with a clear vision look back through the history of Prussia and see the motives which inspired the conduct of her rulers. We can now read the words of Prussia's statesmen and of the masters of recent German thought with understanding minds.

THE CENTRAL THOUGHT OF PRUSSIANISM

We now recognize that the policies of the Imperial Government of Germany and the boasted "kultur" of the German people have been concentrated on the single purpose of expanding the territory and power of the Prussian Emperor of Germany until he, through the possession of superior force, became the primate of all the rulers of the earth. World dominion was the supreme object. That was and is the central thought of Prussianism.

It excited the cupidity of the governing and wealthy classes of the Empire and dazzled with its anticipated glories and by its promise of a boasted racial superiority the German millions who were to be the instruments of achievement.

Germans of high and low degree believed dominion over all nations to be the destiny of their race, and with a devotion and zeal worthy of a better cause turned their energies into those channels which would aid the ruling class in their plans to attain the summit of earthly power, Germany's vaunted "place in the sun."

I know that many Germans indignantly deny that this ambition for su-



Photograph by A. E. Young

ALL THE RESOURCES OF OUR REPUBLIC ARE ENLISTED IN THE STRUGGLE TO PREVENT
THE DOMINATION OF THE WORLD BY THE TEUTONIC EMPIRE

A freight steamer of the Great Lakes is doing its vital bit in transporting raw material to the munition plants, where shell and cannon are being manufactured to blast Germany's ruthless ambitions for world dominion.

pre-eminence has inspired the conduct of the German Government or that it existed in the minds of the German people. I wish sincerely that it were so, for it would make the problems of the future far more easy of solution. But the numerous utterances of German thinkers and writers belie these defenders of Germany's purity of motive.

AN AMBITION TO BE "SUPERMEN"

It is hardly open to debate, in the light of subsequent events, that the philosophical and political ideas which have been taught for years from the university platforms, from the pulpits, and through the printed word to young and old in Germany excited in them an insolent pride of blood and infused into their national being an all-absorbing ambition to prove themselves "supermen," chosen by natural superiority and by divine mandate to be rulers of the earth.

Not only in Germany but among those of German descent in other lands has this pernicious belief spread, linking Germans everywhere to the "Fatherland" in the hope that they would be considered worthy to share in the future glory of the masters of the world.

A few examples of the teachings which have so molded German character and implanted in the German mind false conceptions of life will suffice to show their nature and the evil influences which they exerted on a people peculiarly susceptible to flattery and possessed by a selfishness which blunted their sense of honor and of moral obligation.

Professor Theuden, imbued with an astounding vanity, which is characteristically German, declared, as the great war began: "Germany, as the preponderant power in a Pan-German League, will with this war attain world supremacy." And Poehlmann, in considering the good to Germany which would result from the conflict, wrote to his fellow-countrymen, "We shall be an unconquerable people capable of ruling the world."

A SINISTER GERMAN CONFESSION

These words but described those visions which the German philosophers, acting possibly under the direction, and cer-

tainly with the approval, of their government, had so constantly conjured up to allure and tempt the German people. They were uttered before the great Prussian war machine had failed in its first endeavor to plough its way through to Paris and in proving itself to possess the irresistible force in which its builders believed.

A decade before the war Reiner, inspired with the imperialism of Prussia, announced: "It is precisely our craving for expansion which drives us into the paths of conquest, in view of which all chatter about peace and humanity can and must remain nothing but chatter."

Not less ominous to liberty are the words of Professor Meinecke: "We want to become a world people. Let us remind ourselves that the belief in our mission as a world people has arisen from our originally purely spiritual impulse to absorb the world into ourselves."

Observe that extraordinary phrase: "*To absorb the world into ourselves.*" To conceive such a national destiny is to resurrect the dead ambitions of an Alexander or a Cæsar; to teach it as a right to young men is to sow in their minds an egotism which breeds distorted conceptions of individual honor and justice and gives to them an utterly false standard of national life.

THE PRUSSIAN DOCTRINE: "AS WE WILL IT!"

Not alone from the lecturer and the essayist came this idea that the Germans are a superior race, set apart to rule the world. It was preached in the pulpits as a divine truth by those who even had the effrontery to support their assertions by references to the Holy Scriptures. Listen to some of the thoughts proclaimed by ordained ministers of Christ to their German congregations:

"It may sound proud, my friends, we are conscious that it is also in all humbleness that we say it: the German soul is God's soul; it shall and will rule over mankind."

May we be spared the consequences of German "humbleness," which fairly struts and swaggers and which finds further expression in the words of another doctor of divinity, when he declares:



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AMERICA'S APPEAL TO PATRIOTS WAS NOT IN VAIN

"The only way to stay the onrush of blood and desolation is to prove conclusively that the Prussian masters of Germany do not possess the physical might to impose their will on the human race."

"Verily the Bible is *our* book. It was given and assigned to *us*, and in it we read the original text of *our* destiny, which proclaims to mankind salvation or disaster, *as we will it*."

"*As we will it!*" There, in four words, is the whole story of the Prussian doctrine of the "superman," of a "place in the sun," of "world dominion." What a com-

bination of sacrilege and vanity to assume that the Almighty would confer on a people such as the Prussians have shown themselves to be divine powers on earth!

These are enough, though many more might be given, to show the monstrous ideas which have for a generation been poured into the receptive minds of a stolid, stubborn people, unhabitu-

think for themselves, who have, through these ideas, become fairly saturated with the belief in their invincible power, in their racial superiority, and in God's selection of them, or rather their rulers, to be His partners in governing the world.

"WE ARE THE HAMMER OF GOD"

Side by side with the egotistical conception of the Prussians that they have a monopoly on the favor and power of the Creator, there is another which is utterly savage and unchristian. While it has been variously expressed by the materialists of this generation, Felix Dahn forty years ago uttered the naked thought, which has since been interpreted into action by German militarism.

Thus wrote the poet: "It is the joyous German right with the hammer to win land. We are of the Hammer God and mean to inherit his empire." That is, the earth.

This deification of brute force, with the attendant right of the strong to be masters of the weak, touched a responsive chord in the Prussian mind, and was by some paradoxical process welded to the so-called Christian philosophy of Prussia's theologians.

Thus Thor and Odin stalk again along the shores of the Baltic summoning the tribesmen to battle. Their blood-stained altars have again burst into flame in the hearts of the Prussians. Their fierce priesthood again clamor for victims. In the place of a god of love and mercy the Teutons of the north have raised on high their ancestral gods of brutality and war.

Paganism, tinctured with modern materialism and a degenerate type of Christianity, broods today over Germany. Christian ministers have proclaimed Jehovah to be the national deity of the Empire, a monopolized "German God," who relies on the physical might of His people to destroy those who oppose His will as that will is interpreted by His chosen race. Thus the Prussian leaders would harmonize modern thought with their ancient religion of physical strength, through brutalizing Christianity.

Minds filled with such conceptions of the sacredness of conquest and of the divine right of a ruler to command obedi-

ence have furnished fertile soil for the Prussian policy of acquiring territory and mastery by brute force, regardless of justice, morality, or the rights of others.

This strange mental slavery of a people as highly developed intellectually as the Germans is one of the most extraordinary psychological phenomena of modern times. It is hard to analyze it, and even harder to find for it a plausible explanation.

In such congenial environments the ideas of the absorption of Belgium and the Netherlands, of the Germanizing of the Scandinavian and Slavic countries, of Mittel-Europa, and finally of a world empire greater even in relative extent than that of Macedon or Rome, germinated and thrived.

VAST INTRIGUE SET AFOOT

To make ready for the year and the day when these extravagant dreams of conquest were by force of arms to be made realities and when all nations would be subjugated by the imperial power of Germany, absorbed the thought and dictated the acts of the Prussians who had so successfully subdued their Germanic neighbors, at first physically and later mentally, until they belonged body and soul to their war lords.

With this vast ambition in their hearts, the rulers of Germany sent forth swarms of agents throughout the world to create, in so far as they were able, conditions favorable to the great enterprise. Some sought to win the good will of the nations to which they were sent: others to alienate or weaken the friendships between nations whose alliance or mutual support the German Government feared would constitute a possible obstacle to its great scheme of world conquest.

Sincere and honest, the governments against which these intrigues were directed believed the Imperial German Government to possess a character like their own. Naturally trustful, they fell victims to the snares set to entrap them. There seems to have been no depths of infamy which the Germans did not sound in carrying out their foreign policy of deception.

In what a new light many events of the past appear when the truth becomes



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HE GOES FORTH TO FIGHT FOR THE SAFETY AND HAPPINESS OF FUTURE GENERATIONS
"As the world hopes and prays and searches the future with yearning eyes, the armies and
navies of democracy fight on with grim determination."

known! The "Yellow Peril" speech of the Kaiser, the wholly unjustified, suspicious of imperialistic designs on the part of the United States whispered artfully among nations of South America, the financial schemes and revolutions promoted secretly by Germans in the Caribbean countries, the encouragement of continued turmoil and anti-American feeling among warring factions in Mexico, and the propaganda of distrust and hostility carried on in this country and in Japan are among the things "made in Germany" directly affecting the international relations of the United States.

It is only within a comparatively recent time that we were fully convinced of their origin and gave them their true labels. Yet, because we were so innocent and trusting, the unpleasant truth comes as a greater shock and excites a deeper resentment.

In addition to these practices, which had been in operation long before the great war and were preliminary to that supreme event in the Prussian plan, I might refer to the plots which, after the war began and while this country was still neutral, were directed, approved, or financed by Count Bernstorff, Von Papen, Boy-Ed, Luxburg, Von Eckhardt, and other official representatives and secret agents of the Berlin Government. But the activities of these men have been exposed and their disgraceful record is common knowledge, arousing a just indignation throughout this country.

WATCH LONG KEPT ON GERMAN CONSPIRATORS

I think that I might say, however, that for a long time before it was considered wise to make the facts public the American Government, possessing evidence of their improper conduct, kept constant watch over these conspirators, who depended upon the innocent credulity of "those idiotic Yankees," as Captain Von Papen sneeringly called us.

These complacent plotters little suspected how much was known of the activities of the German embassy in Washington, the military agency in New York, the consulates in various cities, and the numerous spies in German employ by these whom they thought they were de-

luding. These agents credited the mis-carriage of many of their schemes to chance, which had they known the true cause would have given them some very indigestible food for thought.

In view of this spirit of hypocrisy and bad faith, manifesting an entire lack of conscience, we ought not to be astonished that the Berlin foreign office never permitted a promise or a treaty engagement to stand in the way of a course of action which the German Government deemed expedient. I need not cite as proof of this fact the flagrant violations of the treaty neutralizing Belgium and the recent treaty of Brest-Litovsk. This dis-creditable characteristic of the German foreign policy was accepted by German diplomats as a matter of course and as a natural, if not a praiseworthy, method of dealing with other governments.

AN AMAZING INSTANCE OF BAD FAITH

Frederick the Great, with cynical frankness, once said: "If there is anything to be gained by it, we will be honest. If deception is necessary, let us be cheats." That is, in brief, the immoral principle which has controlled the foreign relations of Prussia for over a hundred and fifty years.

It is a fact not generally known that within six weeks after the Imperial Government had, in the case of the "Sussex," given to this government its solemn promise that it would cease ruthless slaughter on the high seas, Count Bernstorff, appreciating the worthlessness of the promise, asked the Berlin foreign office to advise him in ample time before the campaign of submarine murder was renewed in order that he might notify the German merchant ships in American ports to destroy their machinery, because he anticipated that the renewal of that method of warfare would in all probability bring the United States into the war.

How well the ambassador knew the character of his government, and how perfectly frank he was. He asked for the information without apology or indirection. The very bluntness of his message shows that he was sure that his superiors would not take offense at the assumption that their word was valueless



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"THE WORLD MUST HAVE A PEACE THAT WILL MAKE NEEDLESS THE MARSHALING OF ARMIES"

and had only been given to gain time, and that, when an increase of Germany's submarine fleet warranted, the promise would be broken without hesitation or compunction. What a commentary on Bernstorff's estimate of the sense of honor and good faith of his own government!

DECEIVED BY MILITARY CLIQUE OF BERLIN

Before this war began we would not have thought any government on earth capable of such indifference to truth. We admit that we have been the dupes of the military clique in Berlin, because dishonesty of this sort seemed to us inconceivable in these days of international honor and Christian civilization. But I believe that the nations, and I am certain that the United States, will never again be caught in a net of duplicity equal to that which was spread all over the world by the Berlin Government. We have learned our lesson and it has cost

us dear. We will never have to learn it again.

In this consideration of Prussianism, with its pagan philosophy and its perversion of the German mind, I shall not attempt to enter upon a recital of the horrible brutalities perpetrated by the German armies in the prosecution of the war. They have been too often told to require repetition. It would be the needless reading of a catalogue of black deeds of cruelty, which would sicken a tiger, by a nation which claims not only to be moral and possessed of humane sentiments, but to be actually commissioned by the Supreme Being to carry out His will.

I only mention them here as a further manifestation of the revival in Germany of the adoration of brute strength and pitiless war and of the subordination of every noble instinct to the heartless materialism of the ruling class, who seek only power and possessions without regard to the means by which they are

attained. In a word, to show what Prussianism means when translated into action.

GOETHE'S ESTIMATE OF THE PRUSSIAN

But we ought not to be surprised at these terrible manifestations of frightfulness, in view of the past record of Prussia. It was Goethe, I think, who said, "The Prussians are naturally cruel; civilization will make them ferocious." It has made them ferocious. Acquired science merely gave them increased ingenuity in the indulgence of their passion for cruelty.

Let me read you an extract from an article which appeared in the *Fortnightly Review* of February, 1871; and, as I read, remember this was written of the German invasion of France nearly half a century ago. It might have been written in February, 1915, so truly does it portray Prussianism as we know it today:

"For six months one-third of France has been given up to fire and sword. For 300 or 400 miles vast armies have poured on. Every village they have passed through has been the victim of what is only an organized pillage. Every city has been practically sacked, ransacked on system; its citizens plundered, its civil officials terrorized, imprisoned, outraged, or killed.

"The civil population has been, contrary to the usage of modern warfare, forced to serve the invading armies, brutally put to death, reduced to wholesale starvation and desolation. Vast tracts of the richest and most industrious districts of Europe have been deliberately stripped and plunged into famine, solely in order that the invaders might make war cheaply.

"Irregular troops, contrary to all the practices of war, have been systematically murdered, and civil populations indiscriminately massacred, solely to spread terror. A regular system of ingenious terrorism has been directed against civilians, as horrible as anything in the history of civil or religious wars.

"Large and populous cities have been, not once, but twenty, thirty, forty times, bombarded and burnt, and the women and children in them wantonly slaughtered, with the sole object of inflicting

suffering. All this has been done, not in license or passion, but by the calculating ferocity of scientific soldiers."

And yet the world, in spite of this hideous picture of Prussianism, failed to read the truth or to profit by it. Today the beast is again at large, devouring the helpless victims who fall into his power. Has not the time come to end this fiendishness?

Much as enlightened mankind may revolt at the idea, the only way to stay this onrush of blood and desolation, which is the direct consequence of the mad impulses which now hold sway over the German mind, is to prove conclusively that the Prussian masters of Germany, though they are armed with the full strength of the Empire and of its subservient allies, do not possess the physical might to impose their will on the human race, that the ancient gods of the Teutons are false gods, and that the philosophy which has cast over the German people a robe of superior attributes is the product of a consuming vanity and pride.

This idea is distasteful, as it should be, to a world which loves peace and craves repose, because the only instrument which can be employed is force of arms. It means war, unceasing war, until the arrogant and brutal Prussians are humbled, until the Kaiser and his military chieftains despair of their ambitions, until the German people realize that their insolent lords are not touched by divine fire and do not have at their command the powers of heaven.

THE WORLD NEVER AGAIN TO BE VICTIMIZED BY PRUSSIAN PERFDY

The great free nations of the globe have the task laid upon them to destroy the spirit of Prussianism. This they must accomplish if they would preserve for the future those rights of man which it has taken centuries of struggle to wrest from the grasp of despotism.

If the German Government as it is now constituted should succeed to any extent in its purposes, or even if it should not be defeated in the present war, the doctrine and hopes which are now dominant over the German people will not die. Peace under such conditions could hardly



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SOLDIERS OF OUR NATIONAL ARMY TRAINING TO THWART THE DREAM OF PAN-GERMANISM

"Peace the world may seek with passionate longing, but not a peace which contains the seeds of future wars and future suffering. When an end comes to this great war, it must result in a peace that is final and enduring."

more than a brief respite from bloodshed, an unstable truce, during which the Prussian rulers of the Central Powers would devote their energies to preparing for another onslaught on democracy and liberty, for another attempt to win world sovereignty.

It is true that the free peoples of the earth would never again be found as unprepared as they were before this war to meet a militant Germany and would never again be victimized by German intrigue and perfidy. Every government would look to that. But such a state of uncertain peace would compel the whole world to remain under arms in anticipation of German aggression. The resources of the nations, already so heavily taxed by this war, would have to be further burdened for the maintenance of great military and naval establishments. Peace would be in constant jeopardy because it would depend on the belief of Germany's rulers as to their ability to succeed in a new essay of conquest.

It is not such a peace as that which will satisfy the longing of the world. It seeks and must have a peace which will silence for the future the clash of arms and will make needless the marshaling of armies and the assembling of navies—a peace so secure and so certain that man's energies may be safely devoted to the productive and not the destructive pursuits of life, and nations may develop without fear of becoming the prey of foreign aggression.

This great war must end with a decision which will be a blessing and not a curse to the present generation and to future generations. Prussianism, with its distorted ideas, its false conceptions, and its intolerable cruelties, must be brought to an end. The Germanizing of other countries must cease. The dream of "Hamburg to the Persian Gulf" and of an enslaved Poland and Russia must be dispelled.

German diplomacy and intrigue, as now practiced, must be proclaimed an international crime and suppressed forever.

The philosophy of the "superman" and of world mastery must die discredited. The evil influences which have so long poisoned the minds of the German people must lose their potency.

Until these great objects are accomplished, as they will be when the war aims stated by the President are attained, we must go on with the war. There is no other way. Peace without a radical change in present conditions, or even in those conditions preceding the war, would be interpreted by the German people as a vindication of Prussianism. The German Empire would continue to accept its doctrines and to menace the world.

We must go on with the war, intensifying our efforts and expending all our energies and resources, if need be, to obtain the great purpose for which we strive. This task must not be left half done. We must not transmit to posterity a legacy of blood and misery. The world must be made a safe place in which nations and individuals may live free and happy lives.

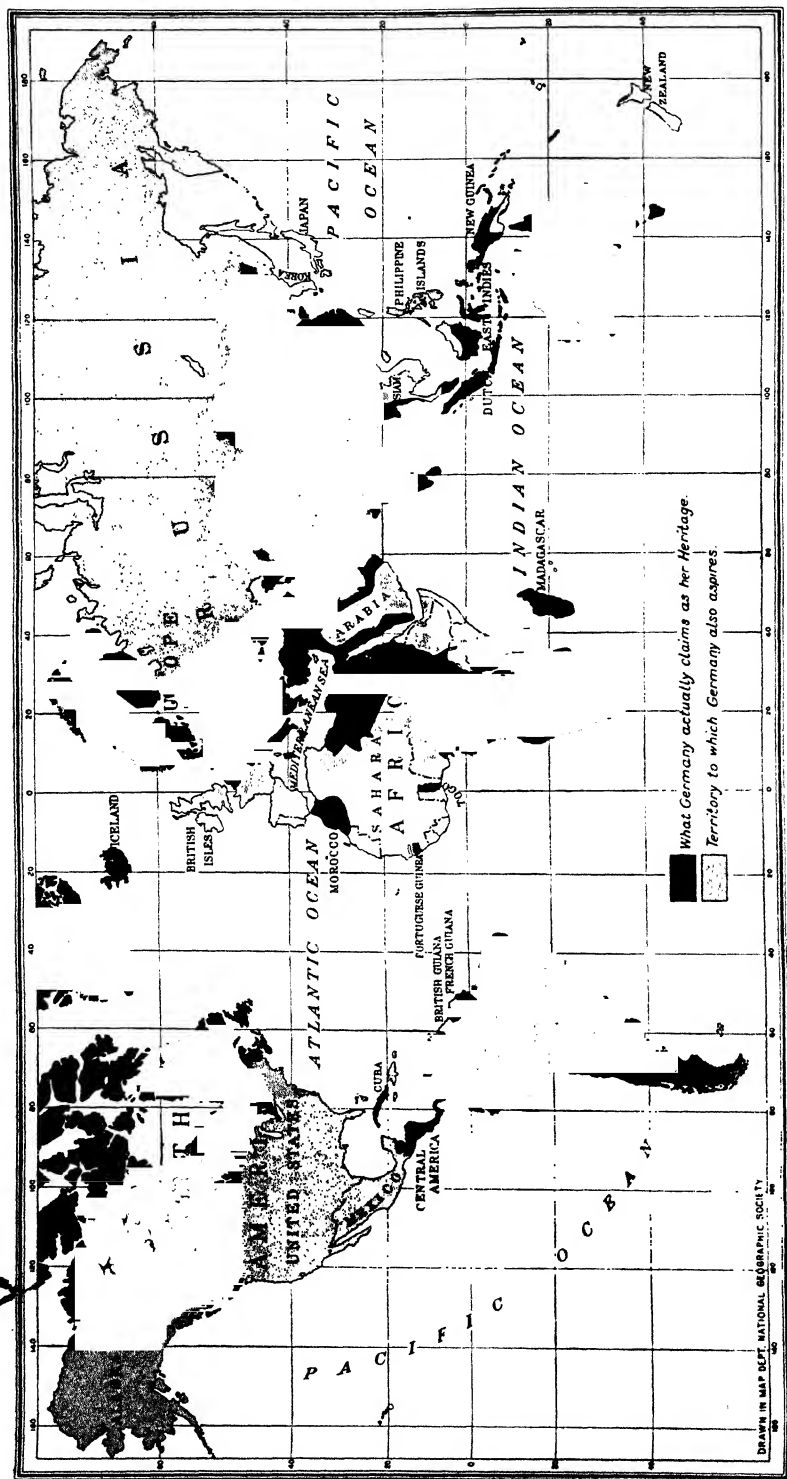
We must go on with the war until the desire of the nations is satisfied and until human liberty is forever freed from the peril which will continue so long as greed and ambition and blood lust dominate the German Empire, so long as Prussianism is supreme in the mind of the German people.

A MIGHTY CRUSADE

We may in this great conflict between civilization and savagery go down into the valley of shadows because our foe is powerful and inured to war. We must be prepared to meet disappointments and temporary reverses, but we must, with American spirit, rise above them. With courageous hearts we must go forward until this war is won.

Closely associated, as I have been in these critical days, with our great leader, Woodrow Wilson, I have been more and more impressed with his wise judgment, with his stern determination to lead democracy to victory, and with his utter confidence in the unity and splendid spirit of the nation.

Let us, as loyal citizens of the Republic, serve in this mighty crusade against Prussianism, confident, as our President is confident, that the righteousness of our cause and the courage and tenacity of the American people will carry this war through to victory and to peace.



THE BLACK SHADOW WHICH THE DREAM OF PAN-GERMANISM CASTS OVER THE WORLD

According to the openly professed aspirations of German statesmen and would-be empire builders, the Germany-Over-All of their dreams embraces an area of 29,000,000 square miles—more than one-half of the land area of the world. This territory which they covet is inhabited by three-fourths of all the people on earth. But even these wild dreams do not tell the whole story of the Prussians' lust for empire and power; they also aspire to the domination of the United States and what remains unconquered of all Russia, adding 11,000,000 square miles of territory and 215,000,000 people (see the shaded portion of the map). All these lands and peoples are sought by means of the sword that was drawn in 1871, and will be sheathed in shame.

GERMANY'S DREAM OF WORLD DOMINATION

BY THE EDITOR

PALTRY indeed seem the dominions of all the tyrants of the past, who attempted to "wade through slaughter" to the throne of world empire, compared with the vaulting ambition of the Hohenzollerns for Prussianizing the earth, as seriously proposed by statesmen, diplomats, and military experts of Germany during the last few years.

Our talented Secretary of State, Mr. Robert Lansing, in the preceding article has revealed the mental attitude of autocratic Prussia toward the remainder of the world. Supplementary to that revelation, it is worth while to recall some of the concrete utterances of Pan-Germans concerning their specific aspirations.

Ridiculous and grotesque would be the claims of these apostles of Germany-Over-All were it not for the fact that such extravagant preachments to the German people have brought about a debauch of blood, rapine, and destruction the like of which has never before afflicted mankind.

The accompanying map of the world tells the story of Germany's all-grasping aims. The areas in black are her own and those lands of her neighbors which she covets.

At the time that Germany plunged the world into war four years ago, the area of her empire in Europe was 208,780 square miles—larger than that of any other nation in continental Europe save her vassal, Austria-Hungary, and Russia. She had a population at home of nearly 70,000,000, while her colonial empire, exceeding a million square miles, had an additional population of more than 14,000,000.

But she was not content. These possessions must be but the core of the great sphere of dominions which she would accumulate in a rolling tide of blood conquest.

GERMANY'S DREAM

Germany claims as her right (through her spokesmen, the leading citizens of the empire), the following:

All of Europe save Portugal, Spain, the uninvaded portion of France, the British Isles, and the as yet unconquered portions of Russia. In brief, she wants in Europe 1,196,000 square miles of the total continental area of 3,872,000 square miles and 270,000,000 of the 464,000,000 inhabitants.

All of South America save the two inconsequential colonies of British and French Guiana. Her aspirations in this sphere include more than 7,400,000 square miles of the total continental area of 7,570,000 square miles and 55,421,200 of the total population of 55,779,000.

In Africa her modest claims embrace 6,840,000 square miles of the total area of 11,622,000 square miles, leaving less than 5,000,000 square miles, largely desert, for her sister nations. The territory which Germany claims in this part of the world maintains a population of 85,000,000 inhabitants, compared with only 57,000,000 for the remainder of the continent.

Considering the extent of the continent, Germany's Asian aspirations would seem amazingly conservative *for her*, were it not that much of the land to which she waives claim is, like that in Africa, an unproductive waste. With Russian Turkestan, India, China, vassal Turkey, and the Mohammedan realms of Persia and Afghanistan—the areas which she wants—the Central Empire would have 5,662,000 square miles of this continent, sustaining a population of approximately 775,000,000. And there should be added to these figures the Dutch East Indies, Germany's by right of the might of large nations over smaller neighbors—735,000 square miles and 48,000,000 people.

All of Australia, with an area of 2,974,581 square miles and a population of nearly 5,000,000. Teuton expectations in this continent have been revealed very recently in the unblushing confessions of Herr Thysson, who is quoted elsewhere in this article.



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SOLDIERS OF AMERICA: DISCIPLES OF WORLD PEACE, OF HUMANITY AND JUSTICE

"It is unbelievable that the blood of brave and devoted hearts, so generously poured out on land and sea in the cause of liberty, is being shed in vain."

ASPIRATIONS IN NORTH AMERICA

Of North America the Pan-Germans profess to covet only Cuba, Central America, and Canada at the present time, but some of her futurists see "the American people conquered by the victorious German spirit, so that in a hundred years the United States will present an enormous German Empire." However, Cuba, the Central American republics, and the British Dominion would add 13,500,000 to the population of Germany-Over-All and an area equal to more than 18 times her European empire at the outbreak of the world war.

Thus it will be seen that the lands and peoples which German statesmen and would-be empire builders actually claim as their right equal 29,000,000 square miles, or more than one-half of the earth's surface, and 1,245,000,000 inhabitants—three-fourths of all the people on the globe.

If we should add to these figures the United States, concerning which certain bold Teutonic spirits have already expressed themselves, and the Russian Empire, which Germany undoubtedly will subjugate unless America and the Entente Allies crush her, the grand total of Kulturland would be 40,000,000 square miles, more than 70 per cent of the earth's land area, and 1,459,000,000 people, all the human beings who breathe save 237,000,000.

What a Gargantuan structure compared with the pigmy Roman Empire in its most extensive hour, under Trajan, when its subjects numbered a hundred million and the word of its Emperor was law over 1,971,000 square miles! And how Alexander would have wept with chagrin at the puny confines of his 2,170,000 square miles of territory in the light of this Brobdingnagian German dream of conquest!

THE KAISER'S WORSHIP OF RUTHLESS CONQUERORS

And by far the most diabolical aspect of this craving for world power is the fact that it has never occurred to the Prussian mind to acquire influence through helpfulness to others. Always it is the sword of the conqueror which beckons the Kai-

ser. This assertion is not inferential; it is based on the avowed statement of the German war lord himself, who boasts thus:

"From childhood I have been influenced by five men—Alexander the Great, Julius Caesar, Theodoric II, Frederick the Great, and Napoleon. Each of these men dreamed a dream of world empire. I have dreamed a dream of German world empire and my mailed fist shall succeed."—From Ambassador Gerard's "Face to Face with Kaiserism," page 16.

Each of those paragons of power, which Wilhelm II keeps enshrined in his heart, had as his sole object in life the glorification of self at the expense of mankind; and the attitude of each toward justice and moral law was the same as that of German leaders today, as so shamelessly admitted by Prince von Buelow in an address before the Reichstag on December 13, 1900, when he declared, "I feel no embarrassment in saying here, publicly, that for Germany *right* can never be a determining consideration."

Here are the words of her statesmen, captains of industry, and publicists, which prove the iniquity of Germany's all-embracing covetousness:

HERR THYSSON'S AMAZING CONFESSION

"I was personally promised a free grant of 30,000 acres in Australia and a loan from the Deutsche Bank of £150,000, at 3 per cent, to enable me to develop my business in Australia. Several other firms were promised special trading facilities in India, which was to be conquered by Germany, be it noted, by the end of 1915. A syndicate was formed for the exploitation of Canada. This syndicate consisted of the heads of 12 great firms: the working capital was fixed at £20,000,000, half of which was to be found by the German Government.

"Not only were these promises made by the chancellor; they were confirmed by the Emperor, who on three occasions addressed large private gatherings of business men in Berlin, Munich, and Cassel in 1912 and 1913. I was at one of these gatherings. The Emperor's speech was one of the most flowery orations I have listened to, and so profuse

were the promises he made that, were even half of what he promised to be fulfilled, most of the commercial men in Germany would become rich beyond the dreams of avarice.

"The Emperor was particularly enthusiastic over the coming German conquest of India. 'India,' he said, 'is occupied by the British. It is in a way governed by the British, but it is by no means completely governed by them. We shall not merely occupy India; we shall conquer it, and the vast revenues that the British allow to be taken by Indian princes will, after our conquest, flow in a golden stream into the Fatherland. In all the richest lands of the earth the German flag will fly over every other flag.'"—HERR AUGUST THYSSON, Germany's greatest steel manufacturer, in a pamphlet wherein he confesses his complicity in an Imperial plot formulated in 1912 to plunge the world into war for Germany's profit.

TANNENBERG'S FORECAST

"Holland, together with her royal family, her European possessions, and her colonies in South America, the Indian Islands, and Australasia, must become the ally of Germany.

"It would form the nucleus of a colonial world empire, if to East Africa, the Cameroons, and southeast Africa we could add Angola and the Congo. As a connecting link with the Cameroons, the French Congo might also be included—7,500,000 square miles, in addition to our 2,265,560. This might justly be called a world empire rich in the productions of tropical flora; the Congo, one of the largest rivers in the world—a colonial possession comparable to England's five—a beginning, by means of which the German nation may finally attain the position to which it is entitled by reason of its importance in the Council of Nations.

"Germany must also have a share in this worship of greatness, and will, under the guise of economic exploitation and protection, win back to 'Kultur' the Asiatic possessions of Turkey, both for her own benefit and the good of the natives.

"To Germany falls, in southeast Asia, yet another possession, namely, the

islands of the Indian Ocean, which, next to British India, form the most valuable colony in the world.

"In order to maintain the balance of power, Germany will be compelled to bring under her sway the largest possible stretch of land in the basins of the two Chinese rivers—the Hwangho and the Yangtze-kiang.

"In Central America we Germans have let slip the opportunity for obtaining Cuba.

"I have touched upon these incidents in South Africa merely to enforce the point for our future guidance in South America, that it will but be a blessing for the peoples of the republics when they pass from the effects of their Portuguese-Spanish heritage under German rule.

"Germany must lay hands upon Central Africa, from the mouth of the Orange River to Lake Chad, from the Cameroons Mountains to the mouth of the Rovuma; she must seize Asia Minor and the Malay Islands, in southeast Asia, and, lastly, the southern half of South America.

"These regions (Asia Minor, Syria, and Mesopotamia) might become for us what Egypt is for England—that is to say, not only an important outlet for the products of our national industry, but also a starting point from which we may extend toward eastern Asia and Africa."—TANNENBERG, in *Gross Deutschland*.

"PLANT OUR FOOT WHERE IT APPEARS IMPORTANT"

"Should it be necessary to increase our territory in order that the greater body of the people should have room to develop, then in that case we will take as much land as would appear to be necessary. We will also plant our foot where it appears important to us on strategic grounds to do so in order to maintain our impregnable strength. Thus if it is of any use to our position of strength in the world, we will establish stations for our fleet—for example, Dover, Malta, and Suez."—WERNER SOMBART.

"We must create a Central Europe, which will guarantee the peace of the entire continent from the moment when it

shall have driven the Russians from the Black Sea and the Slavs from the south and shall have conquered large tracts to the east of our frontiers for German colonization."—PAUL DE LAGARDE, in *Deutsche Schriften*.

"Denmark, as commanding the approaches to the Baltic, is of great military importance to us."—General VON BERNHARDI, in *Germany and the Next War*.

"Our Central Europe enlarges and secures the northern countries by sea-power and secures and enlarges the southern countries by land power; and unites both parts, Orient and Occident, in one vital, manifold, single organism, thanks to imperative geographical law."—ERNST JACKH, in *Deutsche Politik* (June 16, 1916).

"... the supreme importance to us of keeping open, at all costs, the passage through the Sound and the Great Belt. The command of these straits will not only secure the Baltic basin for us, but also keep open the sally ports for our offensive operations against the English blockading fleet."—General VON BERNHARDI, in *Germany and the Next War*.

"Pan-Germanism absorbs also the Scandinavians."—ERNST HASSE, in *Zwanzig Jahre Alldeutscher Arbeit*.

"We require those new Dutch territories, already fertilized by German blood, for the indispensable expansion of our economic dominion. On the Rhine, which has become German to the mouth, we need a free traffic, which the silent resistance of Holland now hampers."—FRITZ BLEY, quoted by Andler, *Pan-Germanism*.

"ALL FOREIGN INFLUENCE IN MIDDLE EUROPE MUST BE ELIMINATED"

"The future territory of German expansion, situated between the territories of the Eastern and Western Powers, must absorb all the intermediate regions; it must stretch from the North Sea to the Baltic; from the Netherlands, taking in Luxembourg and Switzerland, down to the islands of the Danube and the Balkan Peninsula, and would include Asia Minor

as far as the Persian Gulf. All foreign influence must be eliminated."—ERNST HASSE, in *Weltpolitik*.

"We will annex Denmark, Holland, Belgium, Switzerland, Livonia, Trieste, Venice, and the north of France from the Sambre to the Loire. This program which we propose is not the work of a madman, nor is this empire which we wish to found a Utopia. We have already in our hands the means of realizing it."—General BRONSART VON SCHELLENDOFF, former Minister of War.

"Decrepit States like the Argentine and Brazilian republics, and more or less all those beggarly States of South America, would be induced either by force or otherwise to listen to reason."—FRIEDRICH LANGE, in *Reines Deutschtum*.

"Should Belgium take part in the war, it must be struck off the map."—RUDOLPH THEUDEN, in *Was muss uns der Krieg bringen*.

"Germany, Austria-Hungary, and Italy, bound together by economic interests in Central Europe, form a great domain which would be very happily rounded off by the adhesion of Switzerland, Belgium, and Holland in the West and of Poland and Lithuania in the East."—PAUL DEHN, in *Deutschland unter der Orient*.

"It is sad to reflect that neither Paraguay nor Argentina belongs, even in part, to Germany today."—Professor JOHANNES UNOLD, of Munich.

"A MAGNIFICENT FIELD FOR GERMANY"

"The East is the only territory in the world which has not passed under the control of one of the ambitious nations of the globe. Yet it offers the most magnificent field for colonization; and if Germany does not allow this opportunity to escape her, if she seizes this domain before the Cossacks lay hands upon it, she will have secured the best share in the partition of the earth. The German Emperor would have the destinies of Nearer Asia in his power if some hundreds of thousands of armed colonists were cultivating these splendid plains; he might and would be the guardian of peace for all Asia."—A. SPRENGER, in *Babylonien*



Photograph by E. Niebergall

EVERY INCREASE IN THE FOOD SURPLUS OF AMERICA IS AN AID TO DEMOCRACY AND A BLOW AT AUTOCRATIC POWER

"Justice must and will become the supreme force in human affairs. No other result will insure civilization against the evil passions which today convulse the earth."

das reichste Land in der Vorzeit und das lohnendste Kolonisationsfeld für die Gegenwart.

"All Morocco in the hands of Germany; German cannon on the routes to Egypt and India; German troops on the Algerian frontier—this would be a goal worthy of great sacrifices."—MAXIMILIAN HARDEN, in *Zukunft*, July 29, 1911.

"THE STORM FLAG OF THE EMPIRE"

"Now we know what the war is for. It is to hoist the storm flag of the empire on the narrow channel that opens and locks the road into the ocean. . . . We shall remain in the Belgian Netherlands, to which we shall add the thin strip of coast up to the rear of Calais. . . . From Calais to Antwerp, Flanders, Limburg, Brabant, to behind the lines of the French forts—Prussian. The southern triangle with Alsace-Lorraine and Luxemburg. We need land for our industries, a road into the ocean. . . . Never was there a war more just. It shall, it must, it will conquer new provinces for the majesty of the noble German spirit."—MAXIMILIAN HARDEN, in *Zukunft*, December, 1914.

"If Central Europe comes to nothing, then we shall indeed have Central Africa. Central Europe, on the other hand, without Central Africa cannot be contemplated for a moment."—Dr. PAUL LEUTWEIN (son of a former Governor of Southwest Africa), in *Europäische Staats- und Wirtschafts-Zeitung*.

"Germany's requirements come to this: it must stick to the position it has won at the southwest entrance of the North Sea (Antwerp) and must acquire the Suez Canal."—Vice-Admiral HERMANN KIRCHHOFF, in same journal.

"THE GIFT OF A VICTORIOUS WAR"

"We must think of a way, if we are to maintain ourselves as one among the world nations. This way has already been found in process of the war. It is called Association (Genossenschaft)—political, national, military, economic Association. The original nucleus of the Association is Central Europe (Germany plus Austria-Hungary); Poland, too, be-

longs to it by nature. The Near East is brought in to supply us both with (1) foodstuffs and (2) raw materials. A connecting bridge is also needed between Central Europe and the Near East. And there it is—Bulgaria."—PAUL ROHRBACH (of German Colonial Office), in *Deutsche Politik*, May 19, 1916.

"A victorious war . . . would give us the Belgian Congo, the French Congo, and, if Portugal continues to translate her hostile intentions toward us into actions, would also give us the Portuguese colonies on the east and west coasts of Africa. We should then have a colonial empire of which our fathers, who used to smile slyly at our first essays in colonization, could never have dreamt. But the most important factor in this probable partition of the African world is that we should have thereby put an end to the English attempts at dominion from the Cape to Cairo. Between Egypt, which is still English, and Anglo-Boer South Africa would stretch the immense band of our colonial possessions, extending from the Indian Ocean to the Atlantic. Still English, we say advisedly of northeast and South Africa; for who can tell what may happen when the words of the poet are realized: 'One day Germanism will be the salvation of the world.'"—*Kreuzzeitung des Ostheeres* (official publication issued by German Commander at Lodz on the occasion of German Emperor's birthday, January 27, 1915).

A MATTER OF GERMAN "HONOR" TO HOLD ON TO BELGIUM

"In our opinion, it is radically necessary to improve our whole Western front from Belfort to the coast. Part of the North French Channel coast we must acquire if possible.

"On Belgium we must keep firm hold. . . . On no point are the masses more united, for without the slightest possible doubt they consider it a matter of honor to hold on to Belgium.

"Our friends, Austria-Hungary and Turkey, will open to us the Balkans and Asia Minor, and thus we shall assure ourselves of the Persian Gulf against the pretensions of Russia and Great Britain.

"We need liberty of the seas, which



Photograph by Leet Brothers

PRESIDENT WILSON MARCHING AT THE HEAD OF THE PARADE HELD WHEN THE FIRST SELECTIVES IN THE WAR AGAINST GERMAN AUTOCRACY WERE CALLED TO THE COLORS

Up Pennsylvania Avenue the Commander-in-Chief of the Army and Navy of the United States of America led the first men to be called from civilian up arms in behalf of their own land and of all free peoples against Prussianism

was the real cause of war between England and Germany. To obtain it we must have Egypt."—From the Manifesto of German Professors, October, 1914.

"POSSESSION OF NORTHERN FRANCE IS VITAL"

"So far as regards France, the possession of the coastal districts bordering on Belgium as far as the neighborhood of the Somme must be regarded as a vital matter for our future position at sea. The 'hinterland,' which must be acquired with them, must be so delimited that the complete use of the canal ports which we gain, both for industrial and strategic purposes, must be secured. All further acquisitions of French territory, apart from the necessary annexation of the mining district of Briey, must be determined purely according to military and strategical considerations. After the experiences of this war, it must be regarded as a matter of course that we must not in the future leave our frontiers open to hostile invasion, as we should do if we left to our opponents those fortified positions which threaten us, and in particular Verdun and Belfort and the part of the western slopes of the Vosges which lies between them. With the acquisition of the line of the Meuse and the French coast to which the canals lead and the mining districts of Briey, which have been mentioned, the possession of the canal districts in the Department of the Nord and the Pas de Calais is necessarily included.

"The necessity of strengthening the agricultural basis of our nation requires a considerable extension of the Imperial and Prussian frontiers in the East by annexation of at least parts of the Baltic provinces and of those territories which lie to the south of it.

"The reconstruction of East Prussia requires the better security of its frontiers by placing in front of them considerable districts, and also West Prussia, Posen, and Silesia must not remain frontier marches exposed to danger as they are now.

"The security of the German Empire imperatively requires the possession of the whole adjoining territory of Luxemburg and Lorraine, including the fortifi-

cations of Longwy."—From the Manifesto of Six Industrial Associations, May, 1915.

CONQUEST OF INDIA AND CHINA WITH
TURKEY'S AID

"With the help of Turkey, India and China may be conquered. Having conquered these, Germany should civilize and Germanize the world, and the German language would become the world language."—THEODOR SPRINGMAN, *Deutschland und der Orient*, 1915.

"In a hundred years the American people will be conquered by the victorious German spirit, so that it will present an enormous German Empire. Whoever does not believe this lacks confidence in the strength of the German spirit."—ROBERT THIEM, *Alldeutsche Blätter*, 1902.

"At the present moment the center of German intellectual activity is in Germany; in the remote future it will be in America. . . . Germans only need to grasp the situation and the future is theirs. Let them show that they mean to maintain Deutschtum, and then emigration may be directed to America with impunity."—HUBBE-SCHLEIDEN, in *Alldeutsche Blätter*, 1903.

"Not only North America, but the whole of America must become a bulwark of Germanic Kultur, perhaps the strongest fortress of the Germanic races. That is every one's hope who has freed himself from his own local European pride and who places the race feeling above his love for home. Also South America must and can easily become a habitation for German or Germanoid races!"—KLAUS WAGNER, *Krieg*, 1906.

James W. Gerard, former United States Ambassador to Germany, in his account of his experiences at the Imperial Court, declares: "An official (German) declared (in 1915) that they had tried to get England to interfere, together with them, in Mexico, and Germans 'Gott strafe' the Monroe Doctrine in their daily prayers of hate. Every night fifty million Germans cry themselves to sleep because all Mexico has not risen against us."

ACES AMONG ACES

BY LAURENCE LA TOURETTE DRIGGS

AIR duels were unknown four years ago. Boys of 18 or 20, untaught and inexperienced in the art, have flown aloft and mastered it—mastered it so thoroughly that less prudent antagonists have fallen before them, sometimes six in one day. At least a score of such duels have been reported where the victor won by the expenditure of a single bullet!

Lufbery for America, Guynemer for France, Bishop for Great Britain, and von Richthofen for Germany have towered above their comrades from the popular viewpoint because of their conspicuous successes in this new art of aeroplane dueling.

To promote this new and spectacular branch of warfare, the rival air forces of the belligerents have constructed the swiftest and deadliest types of aeroplanes, to be manned by their air duelists—expert sharpshooters and pilots—whose duty it is both to attack the heavy bombing and reconnaissance planes of the enemy and to defend their own slower aeroplanes from chasing aviators.

Each belligerent nation has collected the cream of its sharpshooters into one squadron, or escadrille, where as one unit they can be hurled into a threatened area with every prospect of success over less skilled antagonists.

THE PREMIER ESCADRILLE

France has her Cigognes ("Storks"), the celebrated Spad 3, to which belong Fonck, Heurteaux, Pinsard, Deullin, Gond, Herrison, the Americans Baylies and Parsons, and those who have made the sacrifice supreme—Guynemer, Auger, René Dorme, and de la Tour.

America has her Escadrille Lafayette, which was commanded by Major Lufbery and which stands third among all the fighting escadrilles of France in the number of enemy aeroplanes shot down.

The British have R. F. C. Squadron No. 1, which is commanded by Captain Fullard and which brought down 200 German aeroplanes in a short six months.

And the Germans entrusted their hopes to the famous Tango Circus, so nicknamed by the English pilots by reason of the close formation in which the gaudily painted aeroplanes of this enemy unit flew. The victories claimed by this band amount to more than double those accorded to any single squadron of the Allies. And the commander of this Jagdstaffel No. 11 holds the world record in air dueling, for he lived to conquer 80 enemy machines.

FONCK, OF THE CIGOGNES

The most polished aerial duelist the world has ever seen is René Fonck, aged 23, now flying with the Cigognes, Spad 3. This is the famous fighting escadrille that was commanded by Guynemer at the time of his disappearance, September 11, 1917. Curiously enough, Lieutenant Fonck, who was then a member of Escadrille N. (Nieuport) 103, was Guynemer's avenger. He shot down on September 21 the German pilot, Lieutenant Wissemann, who had written home to his mother in Cologne, boasting that he had been victorious over Guynemer and now need fear no one. As no proof of Guynemer's death has yet been found, the truth of Wissemann's claim is doubted.

Consider the details of Fonck's record. Up to April 3, 1918, he had shot down officially 32 enemy aircraft, engaged in upward of 200 combats, flown over 1,000 hours above the enemy's lines, yet *had never received a bullet hole in his aeroplane!* Now he has 45 enemy planes on his tablet and is the French ace of aces.

Most of his combats are against formations of five or more enemies. While delivering the *coup de grace* to one he must prevent a surprise from the others. How he succeeds in this could never be satisfactorily explained, yet that he does succeed is beyond question. Such incredible perfection in maneuvering and such rapid and infallible accuracy of aim have never been equalled by any other fighting pilot.



LIEUTENANT RENÉ FONCK ON THE MACHINE WITH WHICH HE DESTROYED SIX
GERMAN PLANES IN ONE DAY

Lieutenant Fonck, of the Cigognes, the most famous of French escadrilles, is the world's most polished aerial duelist. He had shot down 32 enemy aviators, had flown more than 1,000 hours above the enemy lines, and had taken part in 200 combats before receiving a single bullet-hole in his own machine. It was Fonck who shot down Wissemann, the German aviator who is reputed to have killed Guynemer.

Lieutenant Dorme, of the same escadrille, who had 23 on his score at the time of his mysterious disappearance May 25, 1917, had shot down 10 of this number before he received more than two bullets in his own machine. He was nicknamed "the Unpuncturable" by his comrades for this superb skill and good

luck. Guynemer returned daily with his plane, and even his clothing, riddled with bullet holes. One can but wonder at the miraculous record made by Fonck.

FONCK REVEALS HIS SECRET

But is it a miracle? Let Fonck himself tell the secret. In an interview with



Photograph by Press Illustrating Service

THE AMERICAN ACE, MAJOR RAOUL LUFBERY, AND HIS NIEUPORT

Note the gun on the engine hood, synchronized to fire through the propeller. On the machine at the rear a Lewis gun is shown mounted on the top plane. Major Lufbery was killed in an air fight on May 19, 1918. His record of official victories over the Huns was 18.

La Guerre Aerienne, of Paris, recently he made the following observations concerning his preparations for combat:

"One must be in constant training, always fit, always sure of oneself, always in perfect health. Muscles must be in good condition, nerves in perfect equilibrium, all the organs exercising naturally.

"Alcohol becomes an enemy—even wine. All abuses must be avoided. It is indispensable that one goes to a combat without fatigue, without any disquietude, either physical or moral.

"It must be remembered that combats often take place at altitudes of twenty to twenty-five thousand feet. High altitudes are trying on one's organisms. This indeed is, at bottom, the reason that keeps me from flying too continuously. And I never fly except when in perfect condition. I am careful to abstain when I am not exactly fit. Constantly I watch myself.

"It is necessary to train as severely for air combats as for any other athletic contest, so difficult is the prize of victory. Yet if one finds oneself in prime condition, all the rest is play."

And these precepts come not from a Sunday-school teacher, but from a youth who has demonstrated his theory with as thorough a test as can be imagined.

"All the rest" may be play, yet there is in that little play of Fonck's a secret of quickness and anticipation that is almost superhuman.

HOW HE DESTROYED SIX MACHINES IN ONE DAY

Lieutenant Fonck is the only Frenchman who has brought down six enemy aircraft in one day. He went up back of Soissons with his patrol on May 9 last and encountered three two-seater machines of the enemy. Two of these he destroyed in less than ten seconds and



Photograph from Paul Thompson

AMONG LIVING AVIATORS HE HOLDS THE WORLD'S RECORD FOR VICTORIES

Major William A. Bishop, V. C., D. S. O., M. C., premier ace of Great Britain's Royal Flying Corps, is a Canadian, 23 years of age. Seventy-two Hun planes have fallen before the skill of this master airman. Major Bishop came to America on furlough last winter and while in Washington, D. C., visited the headquarters of the National Geographic Society, where he wrote "Tales of the British Air Service," published in the January, 1918, number of the NATIONAL GEOGRAPHIC MAGAZINE.

the third fell five minutes later. That afternoon he ran onto a formidable formation of five of the new Pfalz fighting machines working in contact with five Albatros scouts—all single-seaters. He dived into them and sent down three, one after another, the remainder breaking up and escaping before he could catch them. These six machines were shot down with an expenditure of ten cartridges per machine!

THE STORY OF RAOUL LUFBERY

Raoul Lufbery, the boy who ran away from his home in Wallingford, Conn., when he was 17, who wandered half the world over, working at odd jobs until his curiosity was satisfied and his purse replenished, who enlisted as a regular soldier in 1907, and went to the Philippines

for two years, where he won all the prizes of his regiment as the best marksman on the range, and who entered aviation in France, his mother's country, mainly to avenge the death of his friend and patron, Marc Pourpe—this same Major Raoul Lufbery met his death on Sunday morning, May 19 last, with a record of 18 German *aéroplanes* shot down, which is the highest score held by any American. Not a newspaper in our land but told of his loss. This runaway boy died leaving his name as well known to his countrymen as is that of Pershing or Sims.

Among the last heroic survivors of the old school of war-fliers, Lufbery was revered and is mourned most keenly by the group of our young airmen who were under his tutelage in the Escadrille Lafayette, the Spad 124. One of these,



Courtesy of Capt. Jean Richard

ACES AMONG ACES: SOME OF THE MOST FAMOUS AIRMEN WHO HAVE FLOWN FOR FRANCE AND HUMANITY

From right to left: Capt. Albert Heurteaux, Capt. Alfred Auger, Commander Hogrel, Capt. Georges Guynemer, Lieut. Albert Deullin, Lieutenant Andre, Lieut. René Dorme, and Lieutenant Raymond.

David E. Putnam, has already surpassed his chief in one day's chase, having brought down five enemy machines on June 10, according to a dispatch from France.

This places Sergeant Putnam in the proud position of America's ace of aces, with a total score of 13 *aéroplanes* shot down. Forty-two other young American pilots have won one or more victories over their opponents. Ten of them have won their fifth and with it the title of ace.

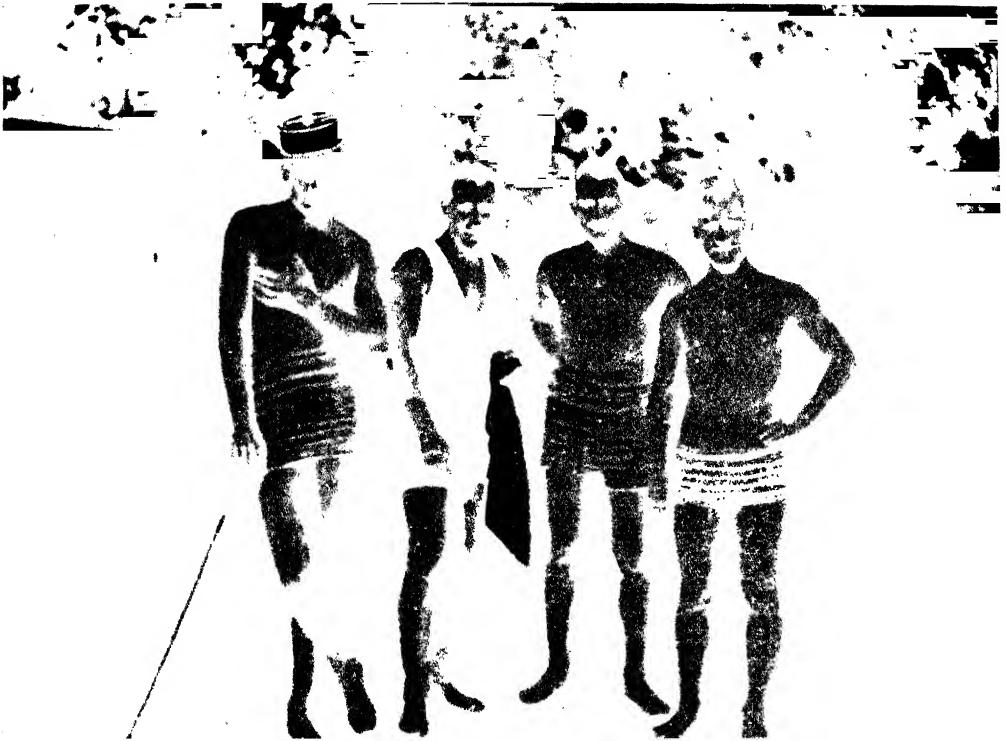
THE HIGH-SCORE ACE OF THE ROYAL FLYING CORPS

"The King has been graciously pleased to approve the award of the Victoria Cross to Second Lieutenant (temporary Captain) James Byford McCudden, who already possesses the Distinguished Service Order, the Military Cross, the Military Medal, the General List, and Royal

Flying Corps, for most conspicuous bravery, exceptional perseverance, keenness, and very high devotion to duty."

So reads a communique of recent date from the British War Office. Captain McCudden has brought down 54 enemy *aéroplanes*, which gives him the highest score among the British pilots, Philip F. Fullard coming next, with 48, and William A. Bishop, the Canadian, who visited the United States during last winter, standing third, with 47 victories.

(Since the above was written an unofficial report states that Major Bishop has added 25 more victories to his score of 47, making a total of 72; stating further that he has retired from air fighting to instruct his freshmen pilots in the art of air dueling. Bishop has now but one competitor for the world's record in the number of aircraft destroyed—Captain von Richthofen.)



FRENCH HEROES WHO ARE AT HOME IN THREE ELEMENTS—EARTH, AIR, AND WATER

After a plunge in the Somme, three French airmen and their squad physician brave the camera. The tall officer, with the cap and cane, is Lieutenant Benois, now in America attached to the French military mission. The officer on the extreme right is Capt. Jean Richard, formerly of the Storks Escadrille, but now detailed to artillery and stationed in Washington temporarily. Lieutenant Raymond stands next to the physician, who wears the black bathing suit.

Capt. Albert Ball, the conqueror of Germany's star air fighter, Immelmann, was himself killed in combat with Lieut. von Richthofen a year ago, after having amassed 43 official successes, at that time the world's record.

Not only does the British champion, McCudden, surpass all his countrymen at the front since Bishop's retirement, but he leads the highest score in France, that of Georges Guynemer, who went out for the last time on September 11, 1917, having at that time accounted for 53 German aeroplanes.

WHAT CONSTITUTES CONSPICUOUS BRAVERY

Let us see what constitutes "conspicuous bravery," in the opinion of the unemotional custodians of the Victoria Crosses in England.

On two occasions McCudden has totally destroyed four two-seater machines on the same day; on the last occasion all four of such two-seaters were destroyed within one hour and 30 minutes—costing Germany some \$250,000, as the value of aeroplanes and trained pilots is computed, for this hour and a half of young McCudden's time.

On December 23, 1917, when leading his patrol, he attacked eight hostile aeroplanes. Two of them he shot down, the others he drove deep into their own lines, returning home himself only when his Lewis gun ammunition was exhausted and the belt of his Vickers gun had broken.

The citation says: "As a patrol leader he has at all times shown the utmost gallantry and skill not only in the manner in which he has attacked and destroyed the enemy, but in the way he has during

several fights *protected the newer members of his flight*, thus keeping their casualties down to a minimum. (The italics are my own.) This officer is considered by the record which he has made, by his fearlessness, and by the great services which he has rendered to his country, deserving of the very highest honor."

It requires bravery truly to bring down 54 armed aeroplanes. But that bravery becomes conspicuous and deserving of the very highest honor when it includes shielding from danger the little fellows who are devotedly following their daring leader.

THE CAREER OF CAPTAIN VON RICHTHOFEN

Manfred von Richthofen, favorite of the Kaiser, a brilliant fighter, a chivalrous gentleman, and the pride of the German army, was the celebrated commander of the enemy air squadron officially known as Judgstaffel No. 11, but familiar to all airmen as the Tango Circus. Of aristocratic birth, he was a lieutenant of Uhlans before the outbreak of the war. The former air champion, Captain Boelke, induced him to enter the Air Service in 1915, and his first victory was won in September, 1916. In seven months the flying squadron which he led shot down 200 aeroplane antagonists.

In less than fifteen months active flying, von Richthofen personally brought down 70 aeroplanes and 10 observation balloons, mostly British. He flew the swiftest type of aeroplanes that German constructors could build, and he mounted upon them two Spandau machine-guns that fired straight ahead between the blades of the propeller. His machine he painted a bright red, and for the past eight months his menacing presence thus courted identification from his enemies with a self-confidence and audacity truly admirable.

He was shot down April 21, 1918, over the Somme River, at the Amiens front, and his new Fokker triplane, a personal gift to him from Fokker himself, fell into the British lines. This machine flew 140 miles per hour and climbed 15,000 feet in 17 minutes. Orders found in his pockets indicated that the enemy army commanders desired this sector cleared of British aeroplanes on the morning of

April 21 at all costs. But it is doubtful whether the fall of Amiens itself would have compensated Germany for the cost she paid in the loss of this great ace.

GENEROUS TRIBUTE TO THE ENEMY ACE

The following generous tribute to an enemy airman is written by C. G. Grey, of London:

"The greatest of our enemies in the air, Rittmeister Freiherr Manfred von Richthofen, is dead. The Royal Flying Corps, his particular foes, will hear the news with mixed feelings. They will rejoice that he is out of action, but will regret sincerely the death of a gallant gentleman who fell bravely doing his duty.

"Only a few days ago one of the best of our airmen expressed the hope that he and von Richthofen might survive the war, so that they might compare notes. Some few months ago a dinner was given to another of our renowned fighting pilots by his squadron, in honor of his winning the Distinguished Service Order. In returning thanks, the hero of the evening, as gallant a lad as ever flew, stood up and proposed the health of von Richthofen. And the fighting pilots of the squadron arose and duly honored an enemy whom they respected. Both the proposer of the toast and his enemy are now dead. One hopes that beyond the shadows they have met, as gallant enemies do when they have fought a good fight and peace has come to them.

"These two incidents indicate, one believes, the feelings of the Royal Flying Corps toward Rittmeister von Richthofen. There is not one in the corps who would not gladly have killed him. But there is not one who would not equally gladly have shaken hands with him had he been brought down without being killed or who would not so have shaken hands if brought down by him.

"His death is bound to have a depressing effect upon the German Flying Service, for obviously the younger and less brave pilots will argue that if a von Richthofen cannot survive their chances must be small. Equally, his death is an encouragement to the younger Allied pilots who can no longer imagine that every skillful German who attacks them is von Richthofen himself.

"However, Manfred von Richthofen is dead. He was a brave man and a clean fighter. May he rest in peace."

Who can now say the day of chivalry is past? Our great enemy ace was buried with full military honors, in French soil, on April 22, and his personal effects were sent home to his family.

A MEAN AND BITTER EPILOGUE

It would be pleasanter to leave the story of von Richthofen's gallant death and funeral thus; but an interesting, though contemptible, epilogue is thrust upon our attention from the land of the fallen hero. It is penned by the notorious Count Reventlow, and appears in the May 1 issue of the *Deutsche Tageszeitung* to poison the mind of the Boche and inflame it into greater hatred against the foe. It says:

"These honors are nothing but the manifestation of British self-advertisement of their 'chivalry.' We once heard much of the chivalrous treatment accorded by the English to Captain von Muller, of the *Emden*, but as soon as he was able to speak we found that instead of chivalrous treatment he had received nothing but deliberate vileness, contempt, and torture from his captors.

"For our part we cannot consider the honors given to the remains of von Richthofen as sincere. The English press is full of them, and with characteristic blatancy blares about British magnanimity. But they say nothing about the huge prizes in money that were offered to the pilot who could kill Richthofen. In fact, these must have amounted to an enormous sum. And this explains the bitter and 'noble' controversy which raged around the corpse of the fallen pilot, for there was cash waiting for the one who inflicted the fatal wound and brought the German machine to earth. The officials themselves who buried our hero were all fortunate money-makers. Thus this spectacle takes on a thoroughly disgusting aspect."

To which Marc Antony might well have said: "Oh Judgment! Thou hast fled to brutish beasts, and men have lost their reason!"

In truth, the official reports have indicated that it is in doubt as to whether

von Richthofen fell from a shot from the air or from the ground. Many aéroplanes were engaged in a "dog fight" at very low levels at the time and machine-guns from the British lines took part in the fray. Suddenly Richthofen's gaudily painted triplane darted into the ground and smashed. Investigation disclosed a bullet through his heart, but from whence it came could not be ascertained.

Subsequently the *Toronto Globe* announced that von Richthofen's conqueror was Capt. Roy Brown, of Carleton Place, Ontario, who was one of the fighting pilots participating in the combat.

THE ROLL OF ACES OF ALL BELLIGERENTS

Having described their methods and peculiarities and studied their characteristics, which account for their proved superiority both over their enemies and in comparison with their comrades, let us look at the complete score of the aces of aviation of all the belligerent countries.

This score I have been tabulating since the war in the air began, and it is officially correct up to the date of June 15, 1918, with the exception of the list of British aces, whose records are not made public until His Majesty is graciously pleased to confer upon them the Victoria Cross or the Distinguished Service Order for some extraordinary and brilliant performance of duty. Many British aces must, therefore, be omitted from the following table.

THE SCORE OF THE LIVING ACES OF FRANCE

Fifty-five French aces, living, have brought down 547 enemy aéroplanes, as follows:

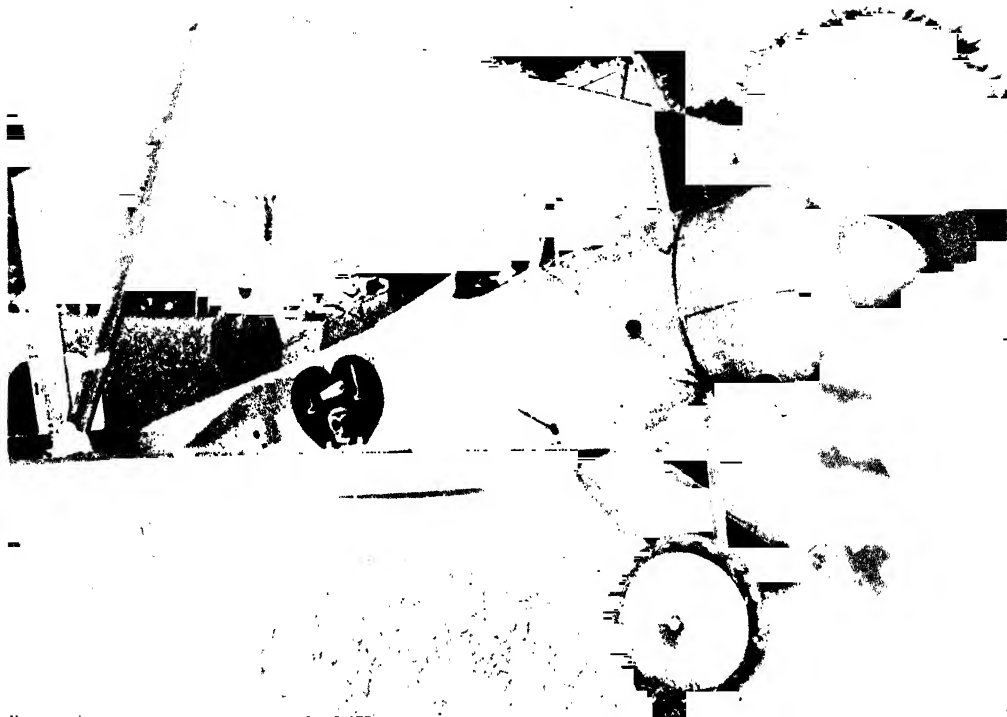
Lieut. René Fonck.....	45
Lieut. Charles Nungesser.....	36
Lieut. George Madon.....	34
Capt. Albert Heurteaux.....	21
Adj. Guérin.....	21
Lieut. Deullin.....	10
Capt. Armand Pinsard.....	18
Lieut. Maurice Boyau.....	18
Lieut. de Meuldre.....	13
Lieut. Marcel Hughes.....	12
Adj. Jailler.....	12
Lieut. Sardier.....	11
Lieut. Tarascon.....	11
Lieut. Ortol.....	11
Adj. André Herbelin.....	10
Lieut. Garaud.....	10
Lieut. de Turenne.....	10
Adj. Châinat.....	9
Adj. Casale.....	9
Adj. Dauchy.....	8
Lieut. Viallet.....	7
Capt. Derode.....	7
Lieut. de Sevin.....	7



Courtesy of Capt. Jean Richard

LEFT TO RIGHT: CAPT. LORD HAMILTON, CAPT. HEURTEAUX, CAPT. GUYNEMER,
H. R. H. THE PRINCE OF WALES (WHO IS AN HONORARY MEMBER
OF THE STORKS ESCADRILLE), LIEUTENANT CASSAR
(STAFF OF PRINCE OF WALES), CAPT. DE LA
TOUR, AND CAPTAIN D'HARCOURT

Lieut. de Slade.....	7	Soldat Louis Martin.....	6
Adj. Leon Vitalis.....	7	Lieut. Leps.....	6
Lieut. Lachmann.....	7	Lieut. Raymond.....	6
Lieut. Flachaire.....	7	Lieut. Alex Borzecky.....	5
Adj. Victor Sayaret.....	7	Adj. Bloch.....	5
Lieut. Jean L'hoste.....	7	Lieut. Paul Gastin.....	5
Sergt. René Montrion.....	7	Lieut. Regnier.....	5
Sergt. du Bois d'Aische.....	6	Comdr. de Marauncourt.....	5
Lieut. Covin.....	6	Adj. Herrison.....	5
Lieut. Bonnefoy.....	6	Lieut. Marty.....	5
Sergt. Soulier.....	6	Adj. Blanc.....	5
Lieut. Gond.....	6	Sergt. Ouette (missing May 16, 1918).....	5
Sergt. Boyau.....	6	Sergt. Bouyer.....	5
Adj. Dhôme.....	6	Adj. Casenove de Pradines.....	5
Adj. Peronneau.....	6	Sergt. Pierre Marinovitch.....	5
Sergt. Rosseau.....	6	Lieut. Nogues.....	5



Photograph from Laurence La Tourette Driggs

LIEUTENANT CHARLES NUNGESSER; SCORE, 36 HUNS

Nungesser is second only to Lieutenant Fonck among living French fliers in the number of his victories. His fighting plane mounts one gun on the engine hood and one on the upper plane.

RECORD OF FRANCE'S HERO DEAD

Nineteen French aces, dead or retired, have brought down 208 enemy *aéro*-planes.

(The date of the termination of the ace's activities is indicated in parentheses.)

Capt. Georges Guynemer (September 11, 1917).....	53
Lieut. René Dorme (May 15, 1917).....	23
Lieut. Jean Chaput (May 18, 1918).....	16
Lieut. Navarre (retired April 10, 1917).....	12
Lieut. de la Tour (December 21, 1917).....	11
Adj. Maxime Lenoire (October 25, 1916).....	11
Capt. Georges Matton (September 10, 1916).....	9
Sergt. Sauvage.....	8
Capt. René Doumer (April 26, 1917).....	7
Lieut. de Rochefort.....	7
Capt. Alfred Auger (July 28, 1917).....	7
Lieut. Henri Languedoc.....	7
Lieut. de Mortemart (March 20, 1918).....	6
Lieut. Adolph Pegoud (August 31, 1915).....	6
Lieut. André Delorme.....	5
Sergt. Marcel Hauss.....	5
Capt. Lecour-Grandmaison (May 10, 1917).....	5
Lieut. George Baillot (May 20, 1916).....	5
Adj. Pierre Violet (December 27, 1916).....	5

The total of 74 French aces, living and dead, is 755 enemy *aéro*planes shot down to June 15, 1918.

WHAT UNITED STATES ACES HAVE DONE

Maj. Raoul Lufbery (killed May 19, 1918).....	18
Sergt. David E. Putnam, Brookline, Mass.....	13
Lieut. Frank L. Baylies, New Bedford, Mass. (missing June 20, 1918).....	12
Maj. William Thaw, Pittsburgh, Pa.....	5
Lieut. Robert Magoun, Boston, Mass. (wounded April 8, 1918).....	5
Lieut. Douglass Campbell, Pasadena, Cal.....	5
Adj. Edwin C. Parsons, Springfield, Mass.....	5
Lieut. H. Clay Ferguson (wounded March 12, 1918).....	5
Lieut. Paul Frank Baer, Mobile, Ala. (missing May 22, 1918).....	5
Corp. David McK. Peterson, Honesdale, Pa. (last victory unofficial).....	5
Lieut. Edward Richenbacker, New York.....	5

Eleven American aces have a total of 83 enemy planes brought down. Several of the British aces are Americans who enlisted in the Royal Flying Corps.

THE BRITISH LIST

Major William A. Bishop.....	72
Capt. James McCudden.....	54
Capt. Philip F. Fullard.....	48
Capt. Henry W. Wollett (13 in one day).....	28
Lieut. John J. Malone.....	20
Lieut. Allan Wilkenson.....	19
Lieut. Stanley Rosevear.....	18
Lieut. Robert A. Little.....	17

Lieut. Clive Warman.....	15
Lieut. Fred Libby.....	14
Capt. W. C. Campbell.....	14
Lieut. R. T. C. Hoidge.....	14
Capt. Murray Galbraith.....	13
Lieut. Joseph Stewart Fall.....	13
Lieut. A. K. Cowper.....	12
Capt. Whitaker.....	12
Capt. Robert Dodds.....	11
Lieut. M. D. G. Scott.....	11
Lieut. Raymond Collinshaw.....	10
Lieut. R. A. Mayberry.....	9
Lieut. John Andrews.....	9
Capt. Gilbert Ware Green.....	9
Lieut. K. R. Park.....	9
Lieut. M. B. Frew.....	8
Sergt. Dean I. Lamb.....	8
Lieut. Boyd Samuel Breadner.....	8
Lieut. Andrew McKeever.....	8
Lieut. J. H. T. Letts.....	8
Lieut. Lionel B. Jones.....	7
Lieut. A. S. Shepherd.....	7
Lieut. James Dennis Payne.....	7
Lieut. G. E. H. McElroy.....	7
Capt. C. A. Brewster-Joske.....	7
Capt. Wagour.....	7
Capt. Frank G. Quigley (all in one day).....	6
Capt. G. E. Thomson.....	6
Capt. Lancelot L. Richardson.....	6
Lieut. Cecil Roy Richards.....	6
Lieut. Howard Saint.....	6
Lieut. Fred John Gibbs.....	6
Lieut. C. W. Cuddecore.....	6
Lieut. William Lewis Wells.....	5
Lieut. E. D. Clarke.....	5
Capt. Fred Hope Lawrence.....	5
Lieut. Edward R. Grange.....	5
Lieut. W. G. Miggitt.....	5
Lieut. Lawrence W. Allen.....	5
Lieut. William D. Matheson.....	5
Lieut. Stanley J. Coble.....	5
Capt. G. H. Boorman.....	5
Lieut. F. T. S. Menendez.....	5
Capt. K. C. Patrick.....	5
Sergt. T. F. Stephenson.....	5
Comdr. F. C. Armstrong.....	Many
Comdr. R. F. Minifie.....	"
Comdr. E. L. N. Clarke.....	"
Comdr. R. B. Munday.....	"
Comdr. G. W. Price.....	"
Comdr. R. J. O. Compton.....	"
Lieut. V. R. Stokes.....	"
Lieut. W. C. Canbray.....	"
Lieut. H. T. Beamish.....	"
Lieut. E. T. Hayne.....	"
Lieut. G. W. Hemming.....	"
Lieut. J. E. L. Hunter.....	"
Lieut. W. A. Curtiss.....	"
Capt. H. T. Mellings (wounded May 18, 1918).....	"
Lieut. Gerard B. Crole.....	"
Lieut. Robert N. Hall.....	"
Lieut. David Sidney Hall.....	"
Lieut. M. J. G. Day.....	"
Lieut. E. G. Johnston.....	"
Lieut. W. L. Jordan.....	"
Lieut. M. H. Findley.....	"
Lieut. C. B. Ridley.....	"

BRITISH DEAD OR RETIRED

Capt. Albert Ball.....	43
Capt. Brunwin Hales.....	27
Capt. Francis McCubbon.....	23
Capt. George Thomson.....	21
Capt. J. L. Trollope (six in one day).....	18
Lieut. Leonard M. Barlow.....	17
Lieut. Clive F. Collett.....	15
Capt. H. G. Reeves.....	13
Capt. Noel W. W. Webb.....	12
Lieut. Rhys-Davies.....	9
Capt. Henry G. Luchford.....	7

Estimating "many" as at least five, the known list of the British aces accounts for at least 950 enemy aéroplanes with the above named 86 members. Undoubt-

edly the complete list will disclose another score of British aces.

RECORD OF ITALIAN ACES

Maj. Baracca (killed June 21, 1918).....	36
Lieut. Baracchini.....	31
Lieut. Ancilotti.....	19
Col. Piccio.....	17
Capt. Duke Calabria.....	16
Lieut. Scaroni.....	13
Lieut. Olivari (killed).....	12
Lieut. Hauza.....	11
Sergt. Maisero.....	8
Lieut. Parnis.....	7
Sergt. Poli.....	6
Lieut. Luigi Olivi.....	6
Lieut. Stoppani.....	6
Lieut. Arrigoni.....	5

Fourteen Italian aces have totalled 193 victories.

EIGHT BELGIAN ACES, 60 VICTORIES

Adj. Coppens.....	13
Lieut. Thieffry (killed February 23, 1918).....	10
Lieut. de Menthemester.....	10
Lieut. Jan Olieslagers.....	6
Adj. Beulemeester.....	6
Capt. Jaquette.....	5
Lieut. Robin.....	5
Adj. Medaets.....	5

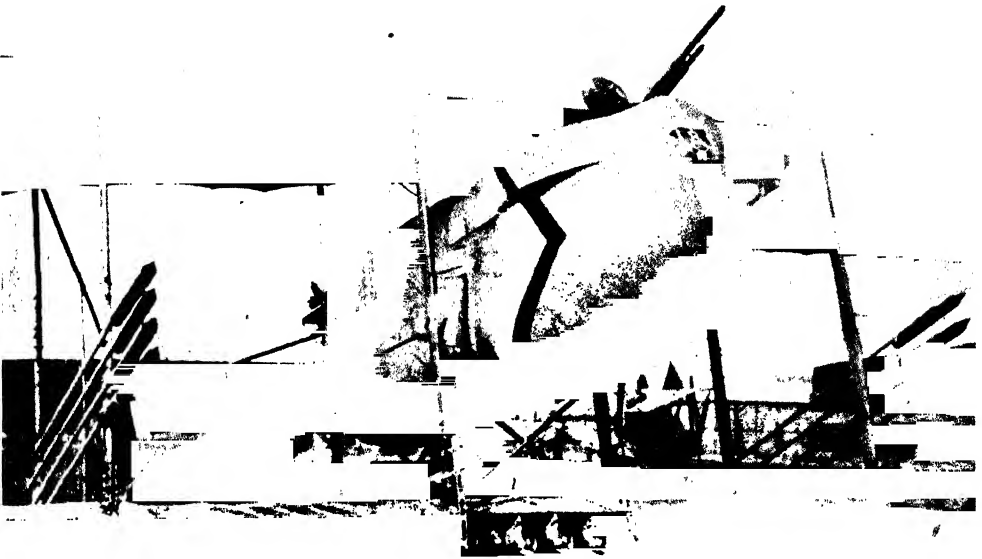
RUSSIAN ACES

Capt. Kosakoff.....	17
Capt. Kroutenn (killed June 22, 1917).....	6
Lieut. Pachtchenko.....	5

LIVING HUN ACES TOTAL 747 PLANES

Thirty-six German and four Austrian aces, living, total 747 aéroplanes.

Lieut. Max Buckler.....	33
Capt. Berthold.....	33
Lieut. Menckhof.....	33
Lieut. Loerzer (wounded June 15, 1918).....	33
Lieut. Schleich.....	30
Capt. Brunowsky, Austria.....	28
Lieut. von Bulow.....	28
Lieut. Kroll.....	28
Lieut. Wnesthoff.....	27
Lieut. Udet.....	27
Lieut. Lowenhardt.....	27
Lieut. Arigi, Austria.....	26
Lieut. Peutter.....	25
Lieut. Link Crawford, Austria.....	23
Capt. Baumer.....	23
Lieut. Kirstein.....	23
Corp. Runcy.....	23
Lieut. Klein.....	22
Lieut. Windisch.....	21
Lieut. Adam.....	21
Lieut. Veltgens.....	21
Lieut. Thuy.....	20
Lieut. Reinhardt.....	20
Lieut. Kissenberth.....	17
Lieut. Schmidt.....	15
Lieut. Hess.....	13
Lieut. Muller.....	13
Lieut. Goettsch.....	13
Lieut. Goering.....	10
Lieut. Bannfield, Austria.....	9
Sergt. Frickart.....	9
Lieut. von Althaus.....	8
Lieut. Esswein.....	6
Lieut. Walz.....	6
Lieut. Hehn.....	6
Lieut. Koenig.....	6
Capt. Zauder.....	5
Lieut. Brauneck.....	5
Lieut. Ullmer.....	5
Lieut. Roth.....	5



Photograph by International Film Service

A TYPE OF NIGHT-FLYING AIRPLANE NOW IN USE

Note the four rockets on each side and the machine-gun protruding over the bow of the boat-shaped fuselage. The radiators for the motor are on each side of the fuselage. Below the lower plane of the machine is a battery of three searchlights controlled, of course, by wired levers within reach of the pilot. A touch of humor is supplied in the manikin figure-head at the bow.

Forty-eight German aces, dead or retired, have brought down 923 aeroplanes.

(Date when activities ceased is indicated in parentheses.)

Capt. von Richtshofen (killed April 21, 1918)....	80
Lieut. Werner-Voss-Crefeld (killed Oct. 8, 1917)....	49
Capt. Bocke	40
Lieut. Gontermann (November 3, 1917).....	39
Lieut. Max Muller (January 15, 1918).....	38
Lieut. Bongartz (wounded March 3, 1918).....	36
Lieut. Curt Wolf.....	33
Lieut. Schaeffer	30
Lieut. Almenroeder	30
Lieut. von Richtshofen, wounded.....	29
Capt. von Tutschek (March 17, 1918).....	27
Lieut. Barnet (October 13, 1917).....	27
Lieut. Dosler (January 1, 1918).....	26
Lieut. Erwin Boehm (December 1, 1917).....	24
Lieut. von Tschwibon (November 22, 1917).....	20
Lieut. von Eschwege	20
Lieut. Bethge (March 17, 1918).....	20
Capt. Behr	19
Lieut. Thulzer	19
Lieut. Baldamus	18
Lieut. Wintgens	18
Lieut. Frankel	17
Lieut. Geigel (May 13, 1918).....	15
Lieut. Schneider	15
Lieut. Immelmann	15
Lieut. Nathanall	14
Lieut. Dassenbach	14
Lieut. Festner	12
Lieut. Pfeiffer	12
Lieut. Manschatt	12
Lieut. Hohndorf (October 13, 1917).....	12
Lieut. Mutschaat	12
Lieut. Buddecke	12
Lieut. von Kendall	11
Lieut. Kirmaier	11
Lieut. Theiller	11
Lieut. Herman Serfert.....	11

Lieut. Mulzer	10
Lieut. Leffers	9
Lieut. Schulte	9
Lieut. Parschau	8
Lieut. Schilling	8
Lieut. Immelmann	6
Lieut. Fahlbusch	5
Lieut. von Siedlitz.....	5
Lieut. Rosenkranz	5
Lieut. Haber	5
Lieut. Reimann	5

Thus, 88 German aces have shot down 1,670 aeroplanes of the Allies. On July 26, 1917, Germany claimed a total of 2,387 enemy aircraft destroyed since the beginning of the war. Since that time more than 1,000 have been added to this list.

TURKISH ACE

Capt. Schetz 8 successes

ALLIES' LIVING ACES, 157; HUNS, 40

Summarizing the foregoing table of the aces and their victories, we find that 88 Germans have brought down 1,670 hostile aircraft since the beginning of the war, while 193 Allied aces have considerably exceeded this score, with 2,041 enemy aircraft shot down. The startling feature in this comparison is the dis-



Photograph from Laurence La Tourette Driggs

AÉROPLANE STRUCK IN MID-AIR BY A SHELL WHICH CARRIED AWAY ONE CYLINDER OF THE ROTARY MOTOR WITHOUT DESTROYING THE MACHINE

closure that German tactics in the air have permitted our enemy to destroy four-fifths as many aéroplanes with one-half the number of aces.

Cowardly as those tactics are, unsportsmanlike as the enemy pilots must admit themselves to be, the German method of air fighting has proved its superiority over the more daring and generous tactics of the Allies, both in economy in the use of man power and machines and in efficiency.

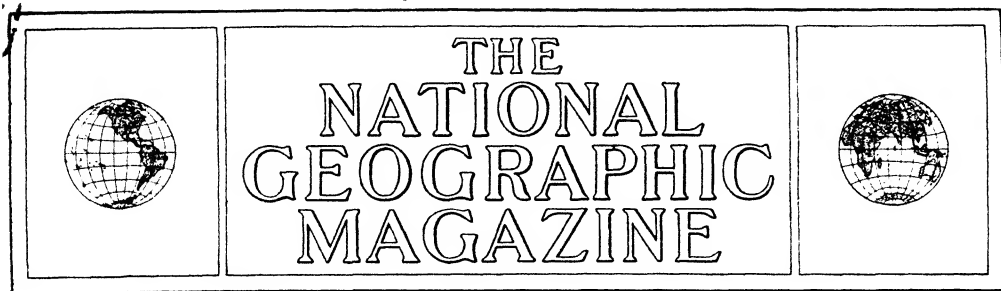
But another conclusion can also be drawn from these figures. Our enemy has but 40 pilots of the ace class remaining, while the Allies have 157. The dead or retired in the enemy list number 48, with 923 victories, as against the 40 still fighting, with 747 victories.

So, not only have our aerial duelists put *hors de combat* the majority of the enemy's star fighters, but in accomplishing this feat we have increased rather than lessened our own supply of expert duelists.

Add to this indication of ultimate supremacy the fact that the allied nations are now producing three or four times as many aéroplanes as Germany, and that the flying schools of the United States are crowded with eager lads impatiently waiting for their fighting mounts, and we begin to feel that the dueling days of Germany's 40 aces will soon be over.

THE TASK OF THE ALLIED ACES

And this 40 must be swept from the skies before our machines of reconnaissance and photographing can operate to perfection. Until the fighting planes of the enemy are suppressed our bombing machines are constantly menaced in their raids over enemy lines. One week's freedom from this menace would permit our bombing squadrons so to destroy the enemy's railroads and highways that the German forces at the front would be wholly deprived of food, ammunition, supplies, and reinforcements. Either retirement or surrender must ensue.



NEW YORK—THE METROPOLIS OF MANKIND

BY WILLIAM JOSEPH SHOWALTER

AUTHOR OF "THE PANAMA CANAL," "HOW THE WORLD IS FED," "STEEL—THE NATION'S GREATEST ASSET," ETC.

This is the first of a series of articles concerning the principal cities of the United States which will appear from time to time in the NATIONAL GEOGRAPHIC MAGAZINE. In word and picture these articles will tell the story of what these cities are today, what problems they are facing, what futures they are planning, and what rôles they are playing in the nation's activities.

WITH German submarines creeping up to the very portals of its busy harbor, with precautions being taken lest on some unguarded, moonless night an enemy hydro-airplane, laden with bombs of destruction, descend upon it out of the sky, the eyes of the whole world are focused upon New York. A city which the great war has made the earth's international trade center and civilization's crowning metropolis, Gotham now commands a new interest, arouses a new pride in its achievements, excites a new feeling of wonder, and stirs in every American breast a realization that it is a city of all the people, national in all its aspects and relations.

Conspicuous above every other phase of its greatness, of course, is its rôle as an international trade center. Last year exports passing out of its harbor had a greater value than the combined exports of Asia, Africa, and Australia. The imports coming through its customs lines exceeded in value those of the continents of South America, Africa, and Australia together.

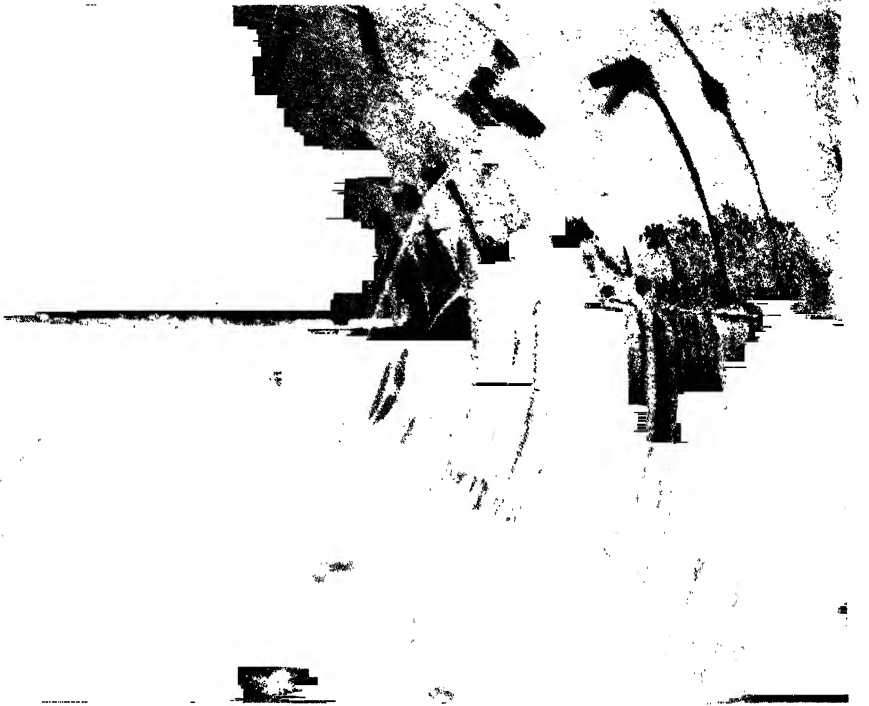
For such operations as these, New York, perforce, must be a great metrop-

olis. In population it outranks any one of half the nations of the earth, surpasses that of the entire continent of Australia, and matches the combined strength of the six westernmost States of the American Union. In annual expenditures it exceeds all except seven of the fifty-odd nations on the map. Its water system could supply the whole earth with drinking water, and its storage reservoirs hold enough to slake civilization's thirst for more than a year. Its electric transportation lines carry nearly twice as many passengers in twelve months as all the steam railroads of the United States. They could give every man, woman, and child living a ride every ten months—so much for the yardstick of comparison.

THE MAJESTY OF THE CITY'S SMALL THINGS

New York is of all cities the one where the majesty of small things is regarded as well as the greatness of large ones.

Who counts a nickel? Yet the greatest transportation system of the ages was built by nickels prospective, and lives on nickels realized. Who reckons a dime,



Photograph from Edwin Levick

A SECTION OF THE BIG TUNNEL THROUGH WHICH CATSKILL WATER PASSES UNDER
NEW YORK

The man in the middle distance gives some idea of the tremendous size of the stream of water required for New York. The small streams flowing in are from underground springs. These were ultimately dammed back by grouting placed between the concrete lining and the solid rock.

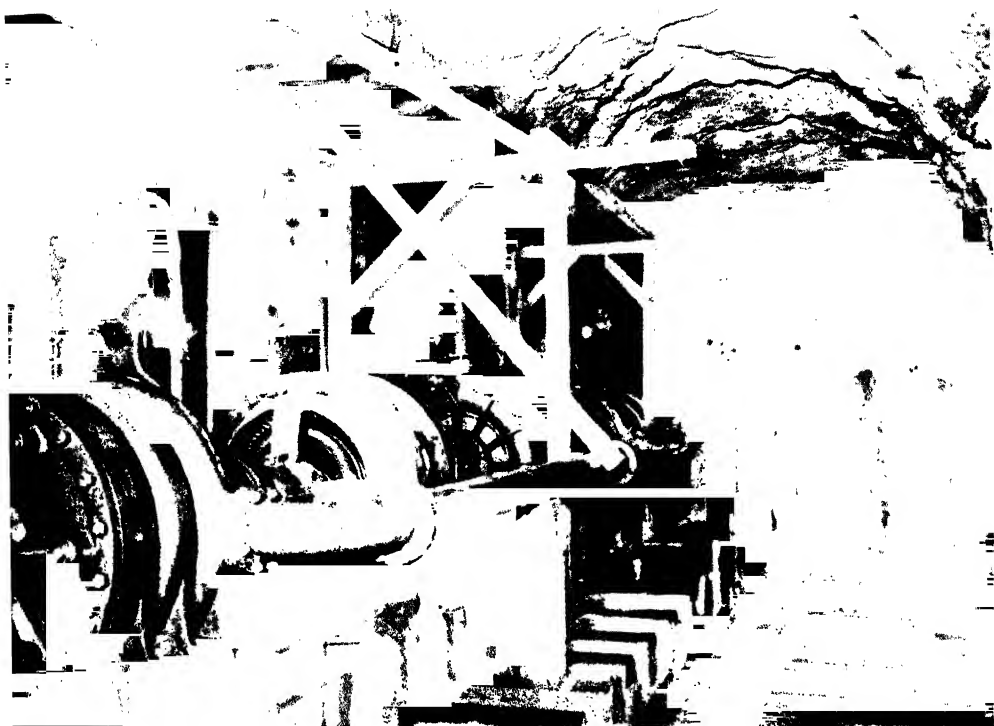
which even the waiter in a quick-lunch room scarcely deems worth a "Thank you"? Yet the world's loftiest building, its crowning cathedral of commerce, was built out of the small margin of profit in ten-cent transactions. Who considers the dust in the street? New York has built up sixty-five acres of ground, valued at several million dollars, out of street sweepings. Who feels the dust and dirt that adhere to his shoes? However, more than seven tons of the housewife's enemy is carried by tramping feet into the subways every twenty-four hours.

THE COSMOPOLIS OF CIVILIZATION

One scarcely knows which to wonder at most—New York, the cosmopolis of civilization, or New York, the metropolis of the western world. It has more Irish and their sons and daughters than Dublin, more Italians and their children than

has Rome, as many Germans and their children as Leipzig and Frankfort-on-Main together, while its Russian population by birth and parentage is greater than the combined populations of Riga and Dvinsk.

But New York's appeal is as much to the people of the United States as to those of the outer world. Glancing at the list of those born elsewhere whom Uncle Sam found living in the metropolis when he last counted noses, we discover that there are more Jerseyites in Gotham than in Passaic, Princeton, and Rahway combined; more Connecticut-born than in Danbury; more people of Massachusetts birth than in Taunton; more Ohioans than in Chillicothe; more Pennsylvanians than in Allentown or Altoona. Every State sends a quota of its people to become part and parcel of New York life, and perhaps a majority of the city's most



Photograph by Paul Thompson

KEEPING A TUNNEL SECTION OF THE CATSKILL AQUEDUCT FREE OF WATER

In excavating the tunnels for this aqueduct, thousands of underground springs were encountered, and electric pumps had to be installed to prevent accumulated water from interfering with the progress of the work.

influential people were born outside its limits.

THE NIAGARA OF AMERICAN LIFE

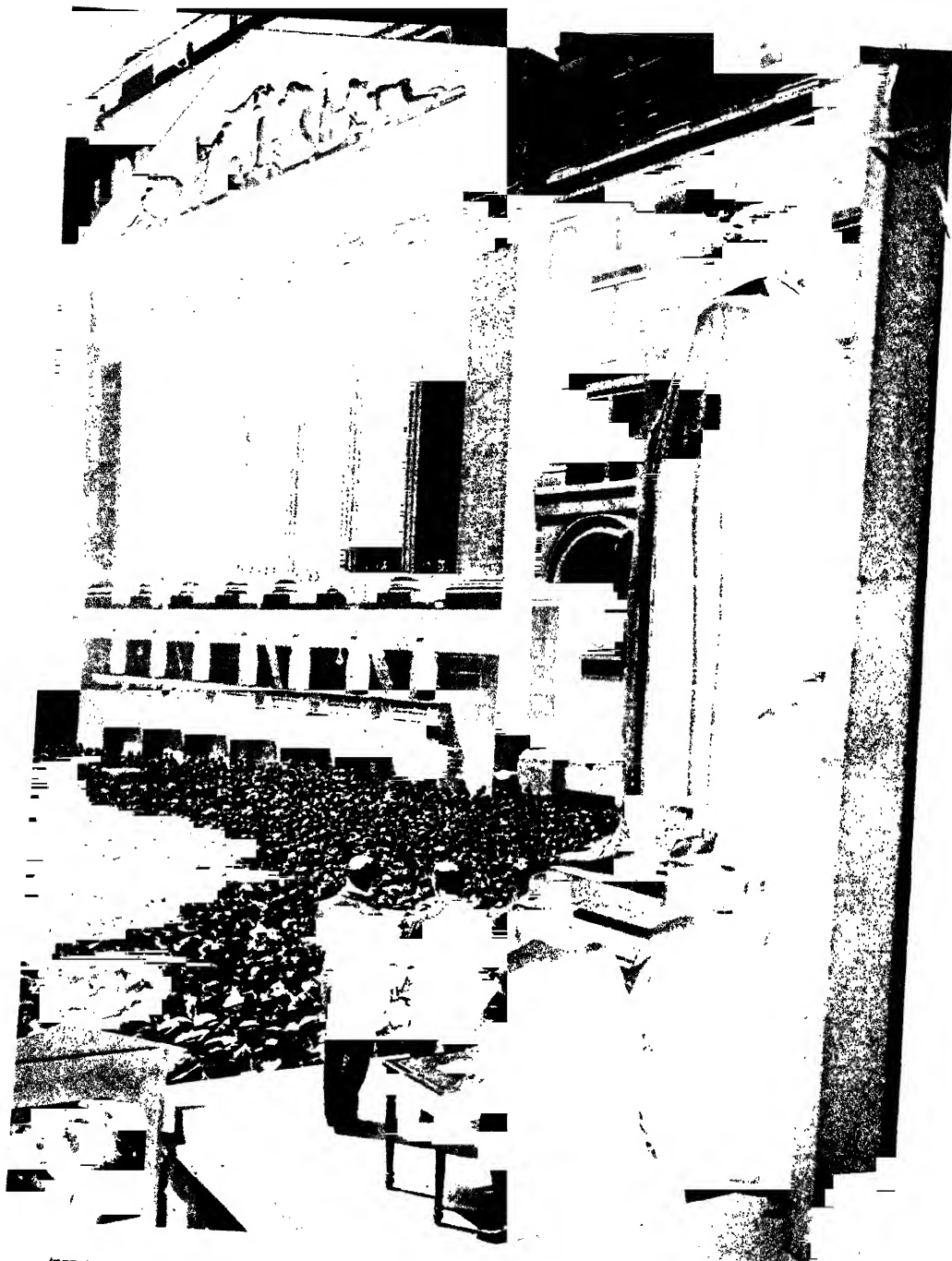
New York is indeed the Niagara of American life. As over the great falls the waters of the continental basin rush down to the Atlantic Ocean, so through this city passes the vast river of humanity that seeks the sea of opportunity in the world beyond. It has been said that standing at 42d street and Fifth avenue long enough one will see every American who does a worth-while thing pass that busy corner. Certain it is that all the currents of human achievement in America do flow in that direction.

Below the falls is the whirlpool. As one stands above Niagara's gorge and watches the swirling waters, seemingly bereft of all sense of the direction where lies the sea, he wonders whether they will ever break the spell of the moment and

find the channel they seek. So, also, standing at the vantage point of Times Square and watching the confusion of the rush hour, with its swirl, its eddy, and its drift, the onlooker marvels that in every drop in this whirlpool of humanity there is purpose.

Any story of New York begins with its people, and in its vast aggregation of humanity there is a wealth of interest.

Let those who have been pessimistic about our immigration study New York. It seems unbelievable; but if every resident whose parents were born in America were to leave the city its standing as the second most populous center in the world would not be affected. In other words, the number of immigrants and their children resident in New York is almost equal to the combined populations of Paris and Philadelphia and greater than the combined populations of Chicago and Berlin.



THE NEW YORK STOCK EXCHANGE FROM THE STEPS OF THE SUBTREASURY
DURING A LIBERTY-LOAN CAMPAIGN

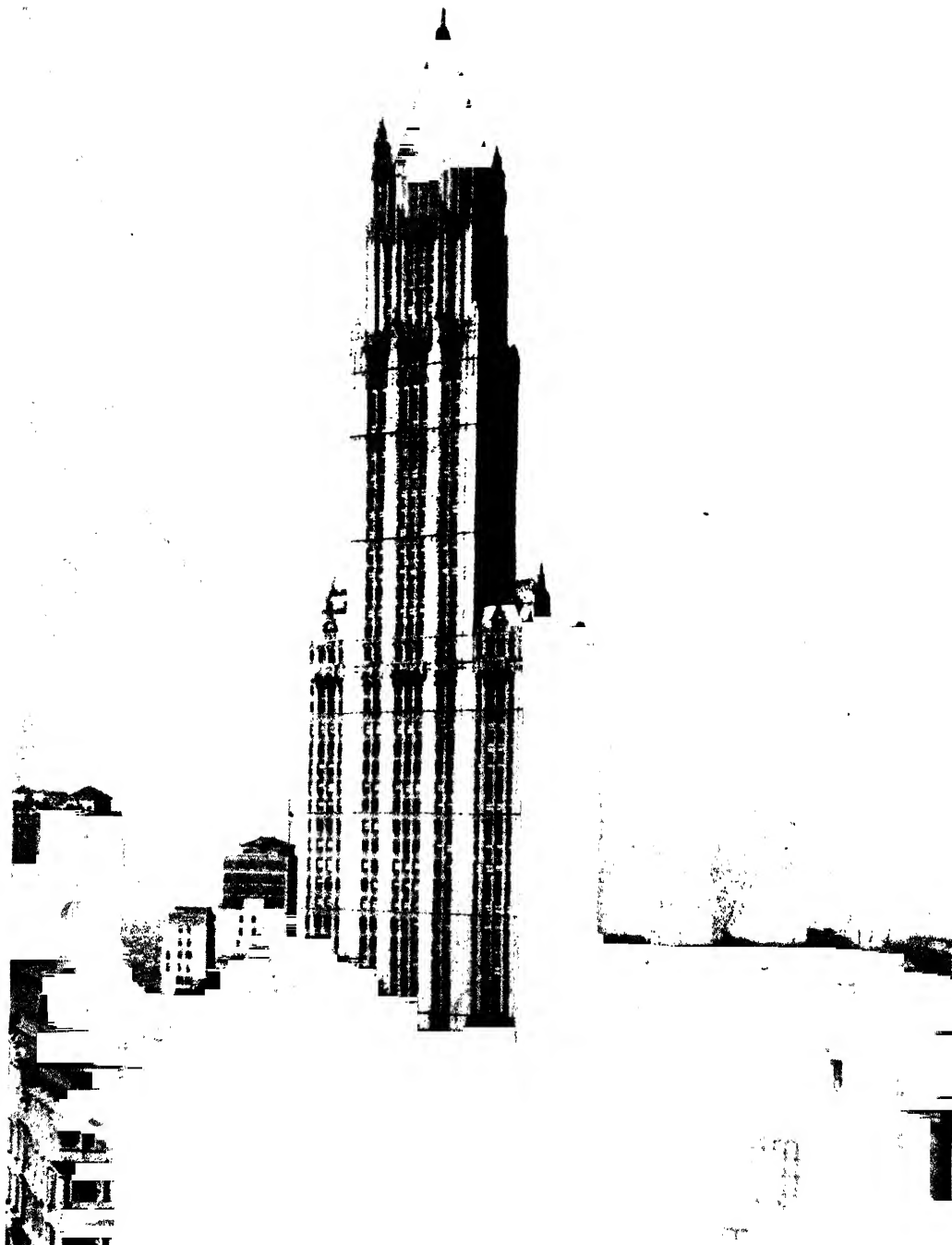
A few figures will show the vast proportions of everything that relates to life in New York. Four transients arrive every second, a passenger train comes into the city terminals every fifty-two seconds, and a ship clears every forty minutes. A child is born every six minutes, a wedding takes place every thirteen minutes, and a funeral is held every fourteen minutes. There is a real-estate transfer every twenty-five minutes, a new building is erected every fifty-one minutes, and a fire occurs every thirty minutes. Every day three hundred and fifty people come to the city to live, and a hundred new telephones are installed.



Photograph by Social Press Association

FIGHTING THE BIG GRAIN FIRE AT DOW'S ELEVATOR, BROOKLYN, NEW YORK

High-pressure service in the downtown district in New York has all but banished the modern big fire. Giant electric pumps, capable of delivering thirty thousand gallons of water a minute, at a pressure of three hundred pounds to the square inch, represent the "big guns" of the fire department. Under such pressure windows are smashed in, partitions are torn down, merchandise is swept aside, and water is driven into every nook and cranny of a structure afire. The ten pumps of the high-pressure service can deliver a hundred streams at once. Veritable walls of water check a fire's effort to spread. Only a negligible number of the city's forty fires a day get beyond the buildings in which they originate.



Photograph by Paul Thompson

THE WOOLWORTH BUILDING

Rising 785 feet above the sidewalk, possessing forty acres of floor space, and having elevator shafts with a combined length of two miles, the Woolworth Building well fits its rôle of tallest building in the world. One of its chief successes is, according to architects, its scale. The architectural adornments which, viewed from the street, look like delicate and elaborate embroidery in stone, do not become coarse or crude when seen close at hand. One authority calls this civilization's greatest cathedral of commerce and another the world's foremost temple of trade. That it is both a beautiful and a substantial structure no one who has ever seen it outside and in will controvert.



© Kadel & Herbert

CONGESTED TRAFFIC ON FORTY-SECOND STREET: NEW YORK CITY

This view of a jam at Fifth avenue and Forty-second street shows what a tremendous task the New York traffic policeman has to encounter. One who stands for an hour at a busy crossing like this and watches an officer keep order from descending into chaos knows that in Gotham there is efficiency both high up and low down. Often there is more journalistic space devoted to one stray deed of one stray policeman than to the ninety and nine good deeds of the ninety and nine earnest guardians of the law who remain in the fold of conscientious service.

Three people out of every four in the great metropolis were born under alien flags or are the children of the foreign-born. But who that has studied the situation can gainsay New York's Americanism?

The story of how the one-fourth of the city's population that is of native

ancestry has Americanized the three-fourths that is foreign in birth or parentage is revealed in the schools.

He who studies at first hand the processes of Americanization and citizen-building finds work being done which would stir the heart of the most unemotional observer. He realizes that all of



Photograph by Paul Thompson

THE SOAP-BOX ORATOR AND HIS AUDITORS

In no other city does the sidewalk Demosthenes thrive so well as in New York, and in no part of New York so well as in Madison Square. He is always against things as they are. His doctrines are those of the Bolsheviki, and his remedies would undoubtedly be worse than the disease; but he always commands an audience and never passes the hat.

what is called New York's politics, stories of graft and the like, are but the froth and foam which fleck the waves of the city's life, while beneath runs a deep current of progress and public spirit, which takes form in carefully conceived and splendidly executed health laws, in a school system that has accomplished wonders, in a water system surpassing anything of its kind on earth, and in a hun-

dred and one other ways not quite so dramatic as the printed stories of its politics and graft, but none the less full of human interest.

THE PUBLIC SCHOOLS

Along with many other cities, New York long since learned that a vast majority of the children who attend public schools do not go to college afterward.



Photograph by Paul Thompson

GARMENT-WORKERS PARADING DOWN MADISON AVENUE: NEW YORK CITY

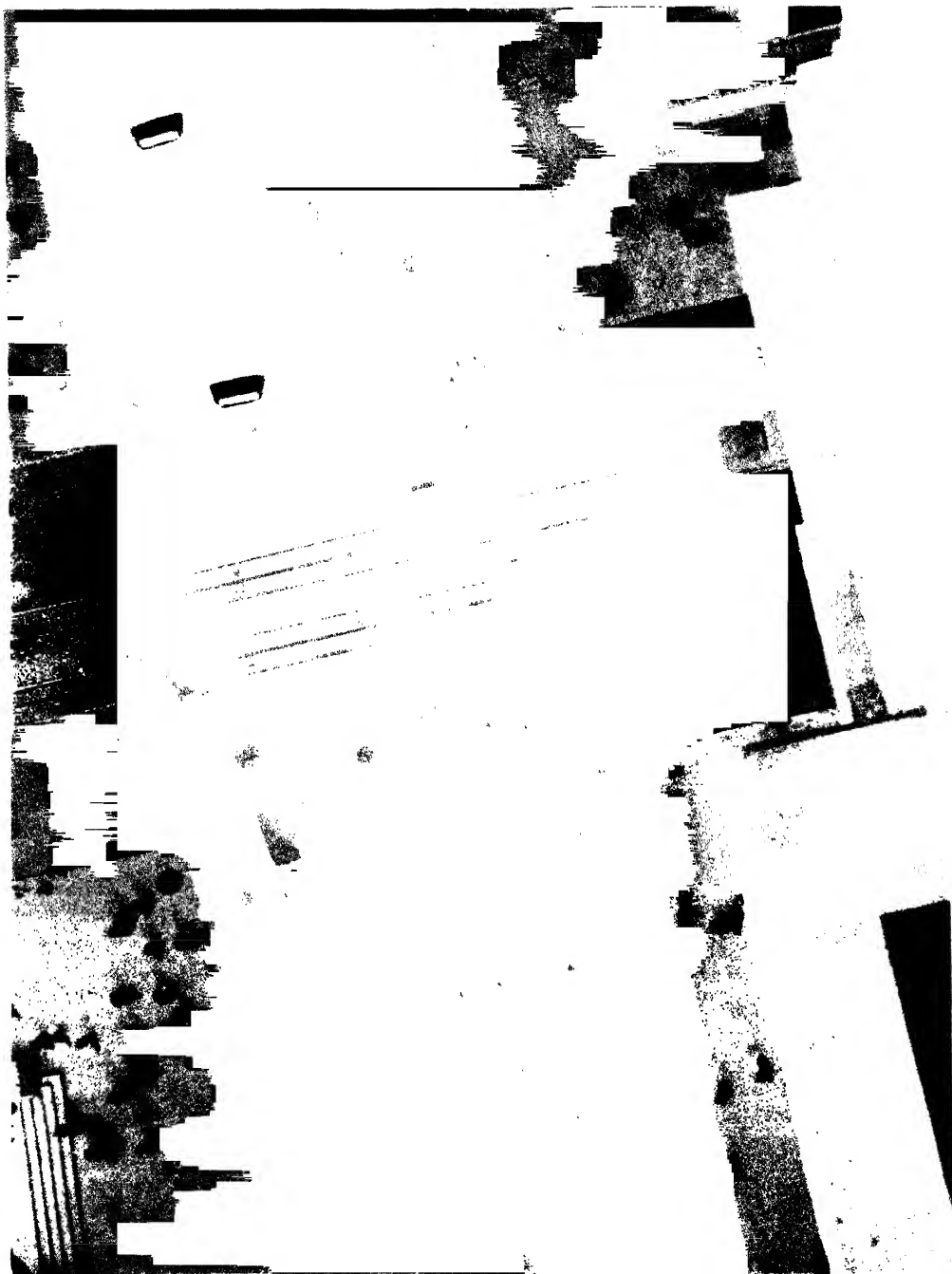
Thousands of such humble folk as these find habitations in brownstone fronts that once were homes of the rich. The rich, fleeing with the approach of business, went uptown and duplicated their downtown brownstone fronts, and so millionaire mill-owner and poor garment-worker may live alike behind a brownstone front, the one above Fiftieth street and the other below Twenty-third.

In times gone by all elementary education was planned to fit boys and girls for colleges, and those who couldn't continue in the appointed channel found themselves half fitted for college, but not at all fitted for life. Then some one proposed that boys and girls whose education was almost certain to be limited should spend their school days preparing for their life work rather than for the college they would never be able to attend.

From that suggestion developed the idea of vocational education, which is now accomplishing wonders. Perhaps

more than any other one agency, it is helping to transform in heart and action the alien life of the metropolis into part and parcel of our body politic. The immigrant's children are being fitted for that economic independence which comes with skilled hands instead of being sent forth from school with untrained hands and poorly trained minds.

A day spent in visiting New York's prevocational and vocational schools gives one much heart and hope. Go with me down on the lower East Side, where the tenement flourishes in all its fabled glory, and visit a prevocational school.



Photograph by Kadel & Herbert

FIFTH AVENUE AND FORTY-SECOND STREET CROSSING

"Step lively" is the spirit of New York. The crossing policeman wants you to do so, the crowd steps on your heels if you do not, and the subway car door goes shut in your face if you are slow; for New York is too big to wait for anybody. One who lives there must be in a hurry, and the drones, whether in business, going to Coney Island, strolling up Broadway, or wherever they may be or whatever their circumstance, are always in people's way. This unusual photograph was made from a building opposite the Public Library.

Here we see children studying the things we studied in the little red school house, with touches of nature added here and there. There is a constant effort to grade the boys and girls, so that each child finds full scope for his capabilities.

The backward children are withdrawn from the regular classes, as are also the especially precocious ones. To go into a class-room where the precocious kiddies hold sway is to see a lot of high-school heads on sixth-grade bodies. It seems almost uncanny to hear such youthful pupils discussing the relations of Japan to the Siberian situation or America's attitude in the matter of after-the-war trade.

THE MANUAL-TRAINING COURSES

When the average boys and girls reach the age of thirteen, they are ready to take up something beside text-books. Aiming alike to prevent square pegs from getting into round holes and to lay the foundations for life training, the prevocational school has many lines of work for boys and girls.

In a boy's department are to be found courses in machine-shop activities, in sheet-metal work, electric wiring, plumbing, woodworking, mechanical drawing, sign painting, garment designing, and printing. Each boy has a number of metal tags like those used in every modern machine shop. These are given in exchange for the tools they desire and are claimed when the tools are returned.

The boys take three courses, which they select with the aid of their teachers. For the fourth term they go back to the one in which they desire to specialize. While they are taking these courses all book work is planned to dovetail with the handwork both in subject-matter and in hours. The sheet-metal worker's arithmetic will deal with sheet-metal workers' problems, and the electric wiring student's science will involve basic electrical principles. The girls' departments have courses in dressmaking, millinery, home-making, etc.

When the children finish their work in the prevocational schools, some of them drop out, but most of them go to the vocational schools, where they carry on the course already begun. These are high

schools, training hand and mind together, and fitting the pupils for their life work.

A boy who finishes the plumbing course at the Vocational School for Boys is a real plumber, and the boy who puts up his building and wires it with every known sort of wire installation can give pointers to many a man who has spent a quarter of a century as an electrician.

FITTING GIRLS FOR LIFE'S RESPONSIBILITIES

For girls, vocational education reaches its highest expression at Washington Irving High School. Here one sees a combination of head, heart, and hand training that transforms the tenement child into a young woman who possesses poise, who has a keen, alert, straight-thinking mind, who knows the responsibilities of life, and who has been imbued with a spirit of high patriotism, right purpose, and clean living.

To teach 5,600 girls every day, to train them in mind and body as Uncle Sam is training his armies at our soldier cities, is a great task. To take that many immigrants' daughters and make them orderly, as jealous of the school's discipline as if they were its responsible head, quiet and dignified in lunch-room, class-room, and corridor, gracious as hostesses to visitors and in their auditorium work, and as patriotic as if every line of their descent lay through Williamsburg or the *Mayflower*—that is a work inspiring in its proportions and rich in its results.

With its motto the three big "I's" of life—Intelligence, Industry, Integrity—Washington Irving High School truly educates head, hand, and heart. A four-year academic course, a four-year librarian's course, a three-year commercial course, a three-year dressmaking and costume-designing course, and a three-year industrial arts course are provided.

Go down into the big auditorium and see several hundred girls in a war-savings stamp meeting, and watch them on the stage making posters. Many a veteran "chalk-talk" artist would envy their work. In the design-drawing work the Washington Irving girls produced last winter successes in commercial art that will be in evidence all over the United States before a year has passed, for merchants and manufacturers in search of



Photograph by Kadel & Herbert

FIFTH AVENUE LOOKING NORTH FROM
FORTY-SECOND STREET

This great thoroughfare has been preëmpted by Fashion and the Shopper. Heavy traffic is rigidly excluded.

new ideas purchased from this source designs for wall paper, rugs, print dress-goods, etc., and were delighted to obtain them.

THE PREPONDERANT FOREIGN ELEMENT IN NEW YORK'S SCHOOL ARMY

When one reflects that seven out of every nine children of school age in New York are of immigrant parentage, a situation is disclosed that might be termed startling, especially when it is remembered that the school army of Greater Gotham is so large that if it marched ten abreast in close formation the front rank would be boarding a North River ferry-boat when the rear guard was crossing the Schuylkill out of Philadelphia.

It is a staggering task which confronts the city in Americanizing such huge numbers of youthful foreigners. Indeed, did it not happen that New York is so rich—with assessed values greater than those of the next seven cities in America combined—it might well call upon the national government for aid. But with such wealth it is bearing the burden alone and is doing it admirably.

One might go on to the length of a whole article writing about striking features of the New York public schools, which stand first among all the agencies for Americanizing the immigrant's children. How these schools take seventy-odd tongues and substitute good English; how they not only labor to fit boys and girls for intelligent and useful places in the country's great industrial system, but also through employment bureaus bring the trained pupil and the open job together; how they provide every year for the children of an added population equal to that of Memphis, Tennessee—none of these achievements or problems can be described here.

NEW YORK'S GUARDIANSHIP OF THE PEOPLE'S HEALTH

Next to the education of its children for their life work and the maintenance of order, a community's most important task is to care for the public health. And here again the big city shines.

If there ever was a city on the face of the globe which to superficial judgment



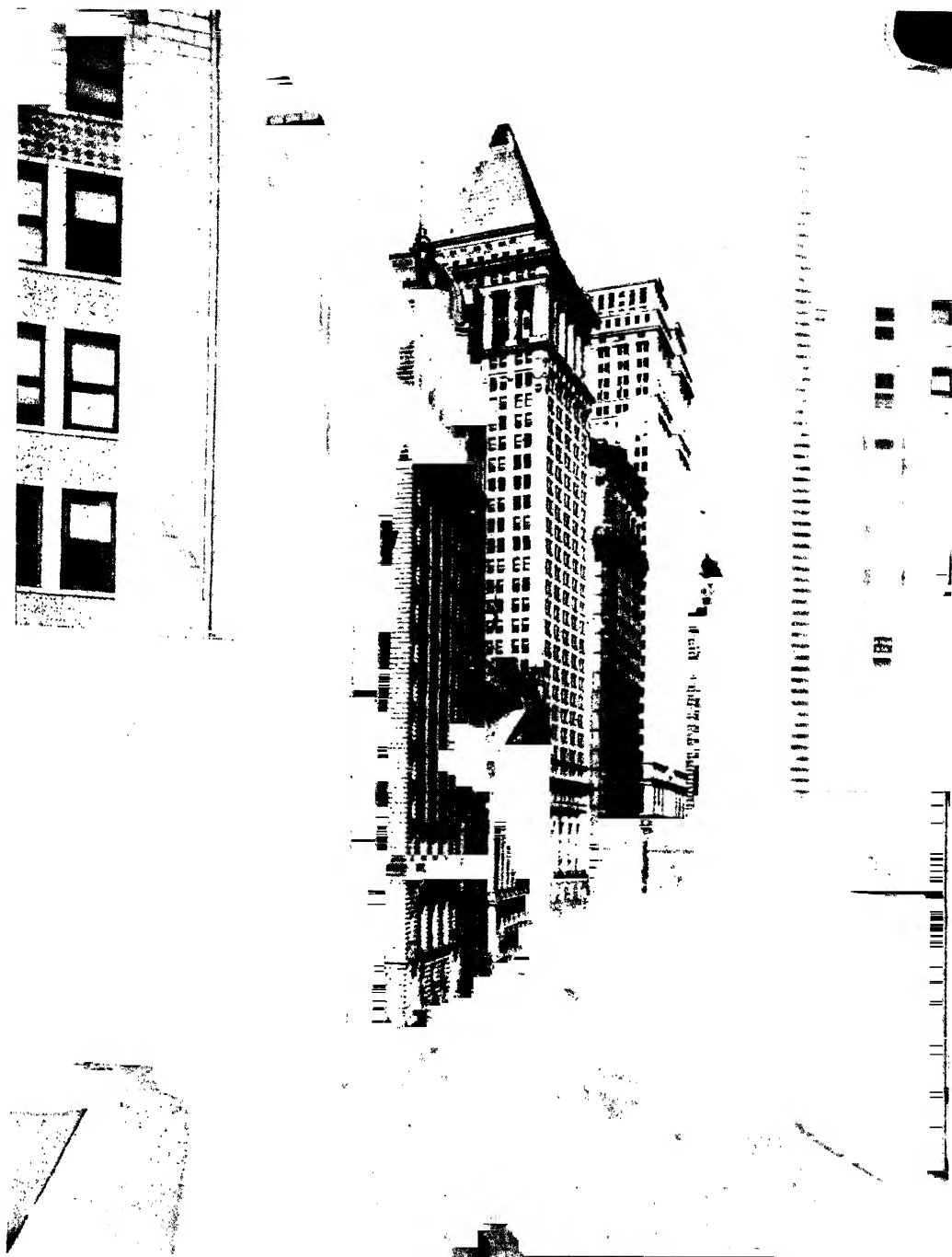
Photograph from Edwin Levick

A MODERN APARTMENT HOUSE OF THE TYPE PREVAILING ALONG RIVERSIDE DRIVE

Nearly four million people live in "tenements" in New York, for under the law a "tenement" is anything from one of the frowsy seven-story affairs in the lower and poorer East Side, overrun by poor children, to the fashionable apartment house on Riverside Drive, open only to tenants who have big bank rolls but no children.

would seem a paradise for all the germs in the catalogue that city is New York. From every continent, every clime, and every country have come its inhabitants. For the most part those who come from foreign lands are as ignorant about the germ theory of disease when they arrive as a primary pupil is ignorant about differential calculus.

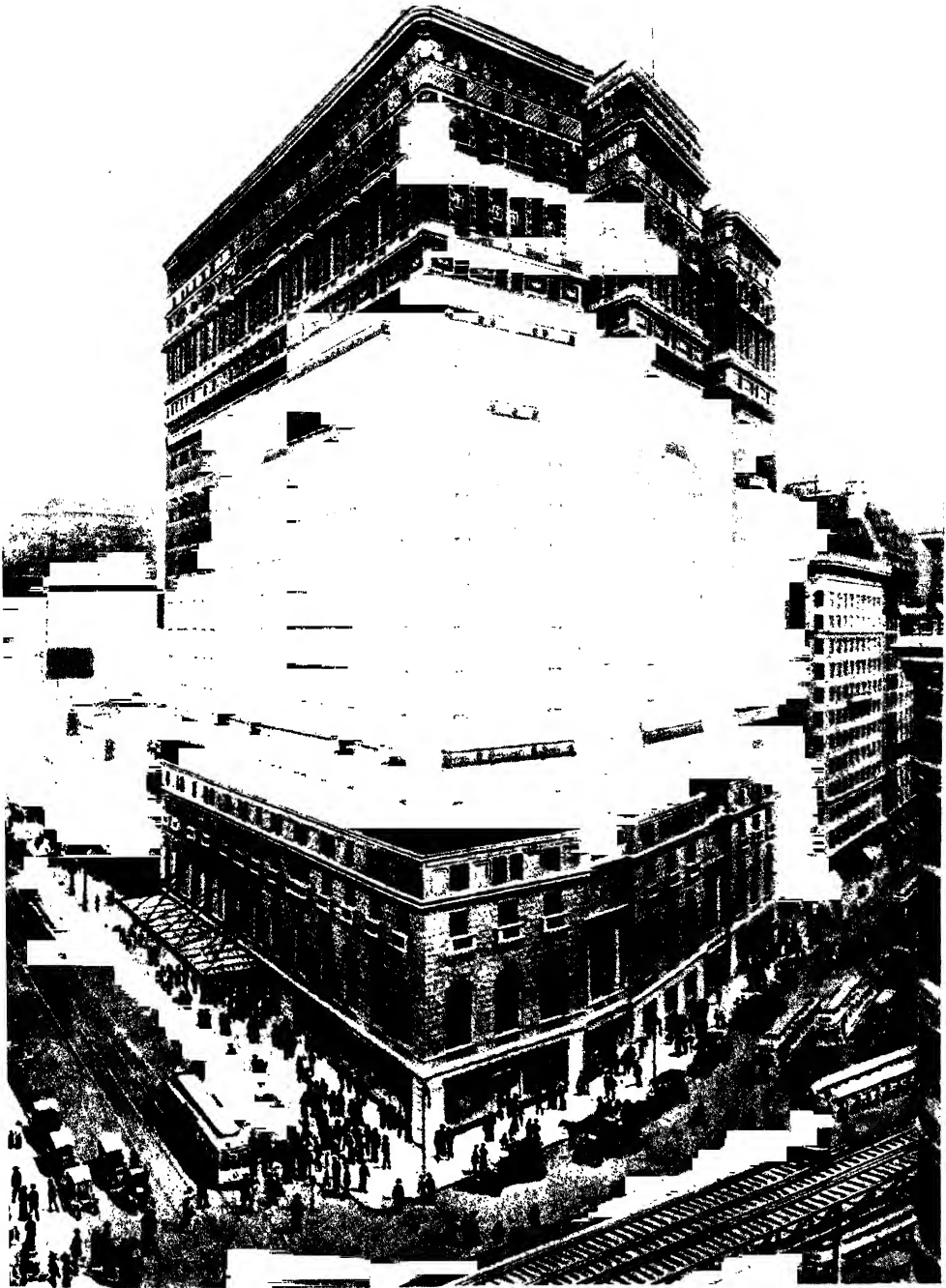
Every one knows that crowding tends to magnify the problem of public health. "Too thick to thrive" is an alliterative phrase which diagnoses the health situation in many an overcrowded population center. When it is remembered that on the average square mile in Manhattan there are nearly as many people as in the whole State of Nevada, and that down



Photograph by Paul Thompson

THE CURB MARKET IN BROAD STREET: NEW YORK

A section of the street is roped off, and within this area, on stirring market days, there gathers one of the most wildly gesticulating crowds imaginable. They are the curb brokers, who buy and sell securities, most of which are not listed by the more conservative exchanges. In the squat little buildings in the foreground are the offices of many of the curb brokers, and the sign-language that passes between windows and street is as eloquent in its unintelligibility to the looker-on as it is in dollars and cents to the participants.



Photograph from S. H. Macfarlane

ONE OF NEW YORK'S GREAT HOTELS

This structure is reputed to be the largest hotel in the world. It has 1,700 rooms. The metropolis has half as much invested in hostelries as Uncle Sam invested in the Panama Canal. Within a single square mile there are enough hotels to house and feed 50,000 people. They employ three people for every five they entertain. No other great city receives so many sojourners, who are both able and willing to pay for every creature comfort; and there is no taste so expensive that a Gotham hostelry cannot fill its demands. Every night the food and drink bill of the hotels and restaurants amounts to more than a million dollars.



Photograph from Edwin Levick

THE CROTON DAM AND SPILLWAY OF THE NEW YORK WATER SUPPLY

The Croton water system, which was New York's main reliance before the Catskill waters were tapped, is not small, even for a big city. There are probably not fifty cities on the globe for which it could not furnish an adequate water supply. But for New York it became so inadequate that the city was face to face with a real water famine repeatedly.

in the East Side the population is many times as dense, the wonder is that it is possible to prevent the city from being a pest hole, with every infectious disease endemic, from anthrax and ague to typhus and cholera. Furthermore, the elevated, the subway, and the surface lines would seem to afford unexampled opportunity for the spread of disease.

But in spite of these conditions, New

York is one of the healthiest cities in America. Compare Manhattan's 1916 death rate of 13.60 per thousand with Baltimore's 18.18, or Washington's 18.01, and it will be realized that to offset its overcrowding, its East Side ignorance, and its vast daily intercourse, New York has a health service second to none in the world. Nowhere else is there to be found a more splendid tribute to the success of



© Keystone View Company

NEW YORK SKY-LINE FROM JERSEY DOCKS

It has been said that there is no wave on the sea of world commerce but sends a ripple to London. Equally true is it that no land suffers without bringing a pang of pain to New York's heart, for all countries have contributed of their peoples, and all lands of their tongues, to make this the modern Rome toward which all roads of migration lead.

preventive medicine in combating "catching" diseases than in the metropolis.

INCREASING POPULATION, DECREASING DEATH RATE

Since 1865 New York territorial expansion has been important, but the increased population per block has been even more noteworthy. Increasing density of population always means multiplying problems of sanitation, but the

health authorities have met every such increase with a decrease of death rate.

There were proportionately only half as many deaths from pulmonary tuberculosis in the decade from 1906 to 1915 inclusive as there were from 1876 to 1885. There were only one-third as many deaths from typhoid, one-fifth as many from diphtheria, one-sixth as many from scarlet fever, and only half as many deaths of babies under one year of age.



Photograph by Paul Thompson

LOOKING DOWN LOWER BROADWAY, ACROSS THE BATTERY, BOWLING GREEN, AND GOVERNOR'S ISLAND, TOWARD AMBROSE CHANNEL AND THE SEA

The New York of the society novelist may be found if one seeks such things, as is the case with every cosmopolitan city. But the New York that makes the education of its youth its first concern, that spends millions for public recreation, that possesses one of the lowest death rates in the world for cities of more than a million people, that in normal years absorbs a hundred thousand foreigners into its body politic—that New York is too prosaic for sensational stories, and so the world's attention is focused upon the one withered petal of human frailty rather than upon the beautiful blossom of civic achievement.

Was there ever more striking evidence of the immense contribution which the science of sanitation makes to the welfare of mankind than those figures? With every element of natural conditions in New York tending to promote the spread of diseases, the health officer has not only held them in check, but has reduced their harmful power to a half, a third, a fifth, and in one case to a sixth of their former potency.

Such a tremendous success in the mastery of "catching" diseases—under which term I include those that are infectious with those that are contagious—forms an epic in human progress.

There are enough babies born in New York City every year to populate four cities like Charlotte, North Carolina, Oshkosh, Wisconsin, Roanoke, Virginia, Hamilton, Ohio, or Springfield, Missouri. As many people in New York die annually as live in four cities like Elkhart, Indiana, Leavenworth, Kansas, Beverly, Massachusetts, or Raleigh, North Carolina. So many births mean an unrelenting fight and eternal vigilance to keep down infant mortality.

THE PRICE OF HEALTH

New York has found, in the words of its Commissioner of Public Health, that it is possible to purchase public health. He maintains that the health officer of a progressive American municipality should not be limited, even to the smallest fraction, in the service or funds necessary in his work any more than the builder of a suspension bridge should be expected to provide a safe span with three cables instead of the four which conditions demand. "Within natural limitations," says this authority, "a city can determine its own death rate. Health insurance is as reliable and profitable an investment for the municipality as it is for the individual."

New York's chart shows how the general death rate has been hammered down and down under the application of modern methods. In 1874, 27.90 people out of every thousand died—a normal year for those times. In 1917, 13.76 out of every thousand died. In other words, New York is saving about 80,000 lives a

year through the application of the laws of scientific sanitation.

Eternal vigilance is the price of health in a congested community like New York. No man may keep a stable without a permit, and no permit is forthcoming until thorough provision against flies and filth accumulation has been made.

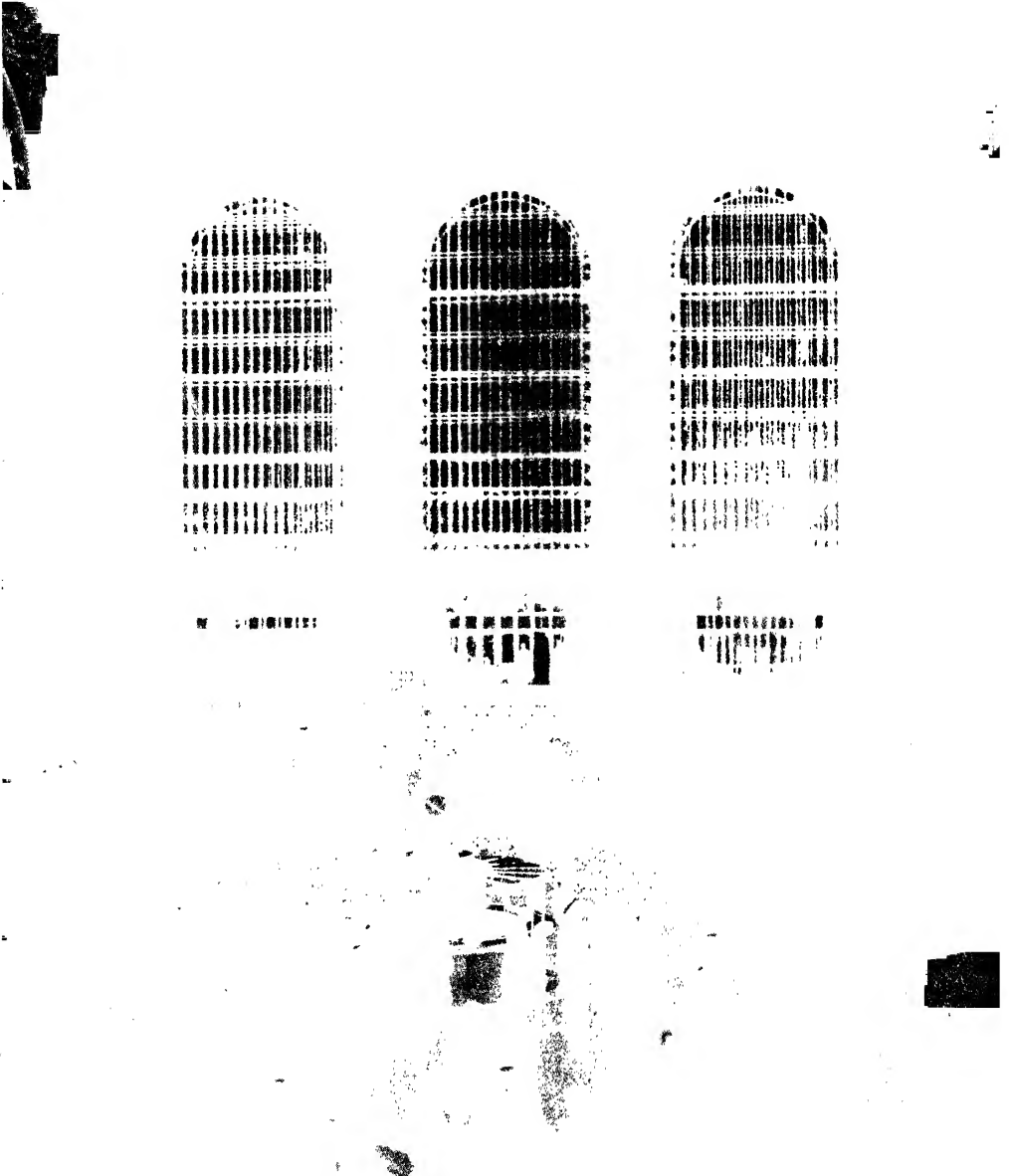
The water supply is carefully watched and samples frequently analyzed to make sure that the city never drinks a mixture of disease germs and water, as so many municipalities do. Even the water-boats which deliver drinking water to ships in the harbor, the bottled waters that are sold, the drinking waters on railroad trains and river steamers are constantly under the scrutiny of the department.

The mosquito is fought as assiduously here as it was at Panama. Rats are guarded against; the ordinance against common towels and drinking cups is rigidly enforced; and in a hundred ways the health department makes the city inhospitable to the germ army that ever seeks a foothold in hapless human systems.

The activity of the health department which has the most widespread appeal, however, is the work of the Bureau of Child Hygiene. More than 140,000 visits of the stork occur annually, and to give the little pilgrims a chance to grow up and become useful Americans is one of the city's principal concerns. Only two decades ago one out of every five of the tiny kiddies lost the hard fight against the diseases of infancy before it was a year old, and went to tenant a tomb instead of living to gladden a home. Today, however, with the health service as its ally, the baby army goes marching on, losing only one out of ten of its number.

GUARDING THE CHILD'S MILK SUPPLY

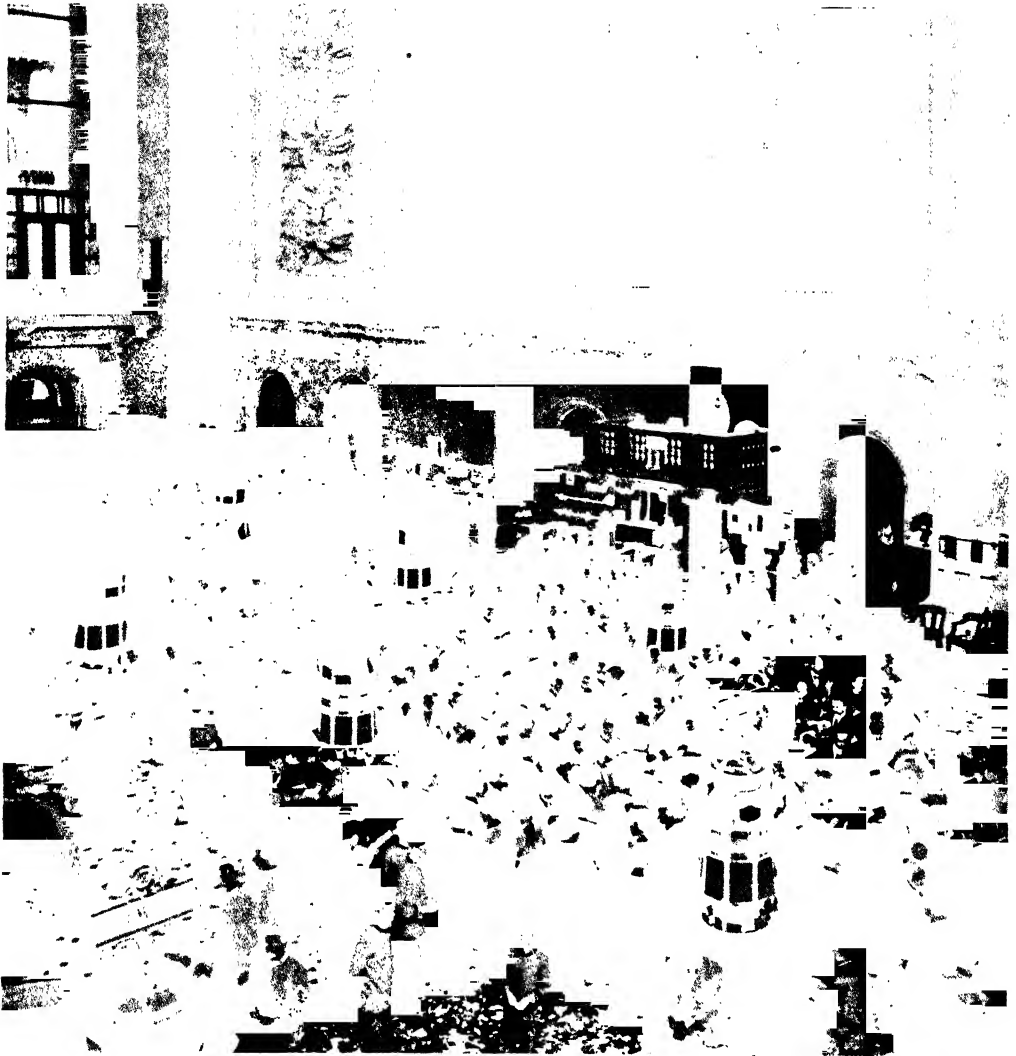
Knowing that the germ army attacks the child army mainly through the milk supply, some sixty infant's milk stations are maintained, and here the mothers of the children come for wholesome milk and for instruction. The first thing taught is that the breast-fed baby has a much better chance to win its battle for existence than the one fed on cow's milk, and thousands of mothers are thus induced to give up their intention of rear-



Photograph by Paul Thompson

INTERIOR OF THE GRAND CENTRAL STATION: NEW YORK CITY

Every day some three hundred thousand passengers arrive and depart through the railroad stations of New York, where nearly one-fifth of the railroad mileage of the United States finds a seaboard terminal. Such tremendous crowds call for vast stations. The Grand Central Station, covering 79 acres of ground, has public rooms where 30,000 can be accommodated at a time without crowding. During its construction the eight hundred daily trains, conveying 100,000 passengers, continued to enter the old structure on the same site.



© Helen D. Van Eaton

WHERE BULLS AND BEARS FIGHT IT OUT, WITH LAMBS AS INNOCENT BYSTANDERS:
THE "FLOOR" OF THE NEW YORK STOCK EXCHANGE

It is asserted that no other feature of the newspapers of the world is so widely read as the New York financial column, which deals principally with happenings that have their inception in this big room.

ing their children as "bottle babies." Nearly 50,000 kiddies visit the milk stations every year and disease germs have a hard road to travel to get into their milk.

The health department endeavors to get into touch with the mothers in the poor districts as early in the prenatal period as possible, and by its visiting nurse service gives the babies the boost of a proper advent into the world. After

a baby is born, it is visited every other day at first, then twice a week, and finally is sent with its mother to the milk station. Under such a course only 26 babies out of each 1,000 die during their first month on earth, as against 36 where this policy is not followed.

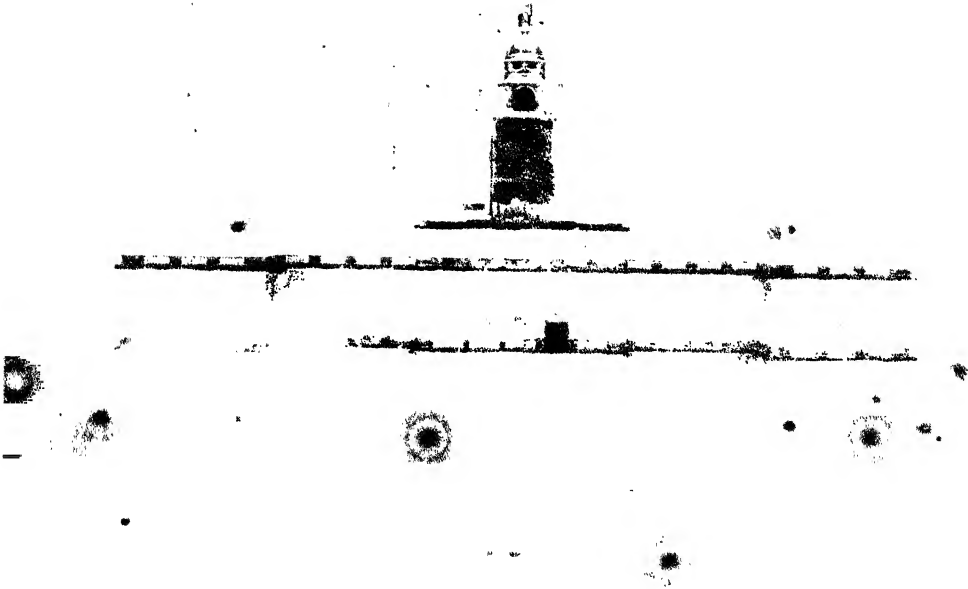
After the milk-station stage on the battlefield of existence, the child moves up past the children's clinic to the public



Photograph by Paul Thompson

NEW YORK SCHOOL BOYS AT A MUNICIPAL PLAYGROUND

The school army of New York is 900,000 strong. Five out of seven of its soldiers were born under alien flags or else have a parent who was. Marching ten to a file, in close formation, the vanguard of the splendid army of future citizens would be coming into New York as the rear guard was passing out of Philadelphia.



Photograph from the New York Edison Company

THE NEW YORK CITY HALL AT NIGHT

New York, with an annual budget of two hundred million dollars, spends more for municipal purposes than Canada spends for dominion purposes in peace times. Yet so great is its wealth that the tax rate is less than two dollars per hundred of assessed value.

school, and here undergoes medical examination at frequent intervals. Adenoids are no longer permitted to retard its growth and mental development, bad tonsils are removed, defective teeth are cared for, and the poor child is given an equal chance with the child of the well-to-do to grow up into a healthy, normal adult, girded with physical well-being and mentally equipped for the warfare of human progress.

The work of food and drug inspection, laboratory research, and other activities might be discussed, but it is enough to say that if "by their fruits shall ye know them," then the New York health service has exhibits to offer which splendidly demonstrate what a municipality can do toward promoting the well-being of its people.

Facing a density of population equalled anywhere else, dealing wit'



Photograph by Paul Thompson

THE HUDSON RIVER AND ITS MANHATTAN AND JERSEY SHORE DOCKS

This striking picture, taken from the Woolworth Tower just after a snowstorm, shows ferry-boats and tugs plowing their throbbing way through wastes of snow-covered, broken ice. It is the lower Hudson, or North River, as it is called locally, that carries the bulk of the commerce of the busiest port on the face of the globe.



Photograph by Edwin Levick

A TYPICAL STREET SCENE IN NEW YORK'S LOWER EAST SIDE, BENEATH THE "L" TRACKS

From such a neighborhood as this come many of the new soldiers of America, who are upholding the flag with a spirit worthy of Valley Forge or Yorktown, although in such a block there may be spoken as mother tongues, as many as twenty-seven foreign languages



Photograph by Paul Thompson

AN ICE-CREAM PARLOR ON WHEELS

With no rent to pay and axle grease in very small quantities required, the ice-cream sandwich man is able to make of his plectet a reservoir for pennies in such quantities that frequently he push-carts his way into the ranks of dairy-lunch owners.

ple who have to be shown at every step of the way, fighting against disease dissemination in crowded factories, crowded cars, crowded streets, New York has triumphed over all its health handicaps.

ALWAYS OUTGROWING ITS UTILITIES

In every phase of its development New York City is like an adolescent boy who is always outgrowing his clothes; the city fathers are kept on tenter hooks to meet its expansion. Its schools are always overcrowded because, rich as it is, the municipality cannot buy sites and build schools fast enough to keep up with the ever-growing child army. Its transportation lines are always choked with passengers because one subway cannot be completed before another is needed. Its bridges and tunnels are always pressed to capacity because the interval between the realization of a new need and the

opening of facilities to meet it is long enough in New York's rate of expansion for a succeeding need to be born.

Everywhere one hears the roar of dynamite—the growing pains of a great city. Months there are as years elsewhere and years as decades. The ultra-modern of yesterday is the commonplace of tomorrow and the obsolescent of a decade hence; for New York adds a Maine - New Hampshire - Vermont population to its own every ten years, and facilities must ever march at double-quick to keep pace with such growth.

But at last the city has found one place where engineering construction is able to outstrip human expansion and prepare for decades ahead. It has built a water system that will take care of half a century of growth and form a unit in the bigger system that may lie beyond that period.



© Paul Thompson

NEW YORK POLICE DEPARTMENT'S SERVICE FLAG

The police force of the city is ready for any emergency. It is said that fifteen thousand civilians can be called to arms and action in an hour. Every precaution has been taken to insure the maintenance of law and order in the face of any aerial or submarine attack.

THE LONG FIGHT FOR AN AMPLE WATER SUPPLY

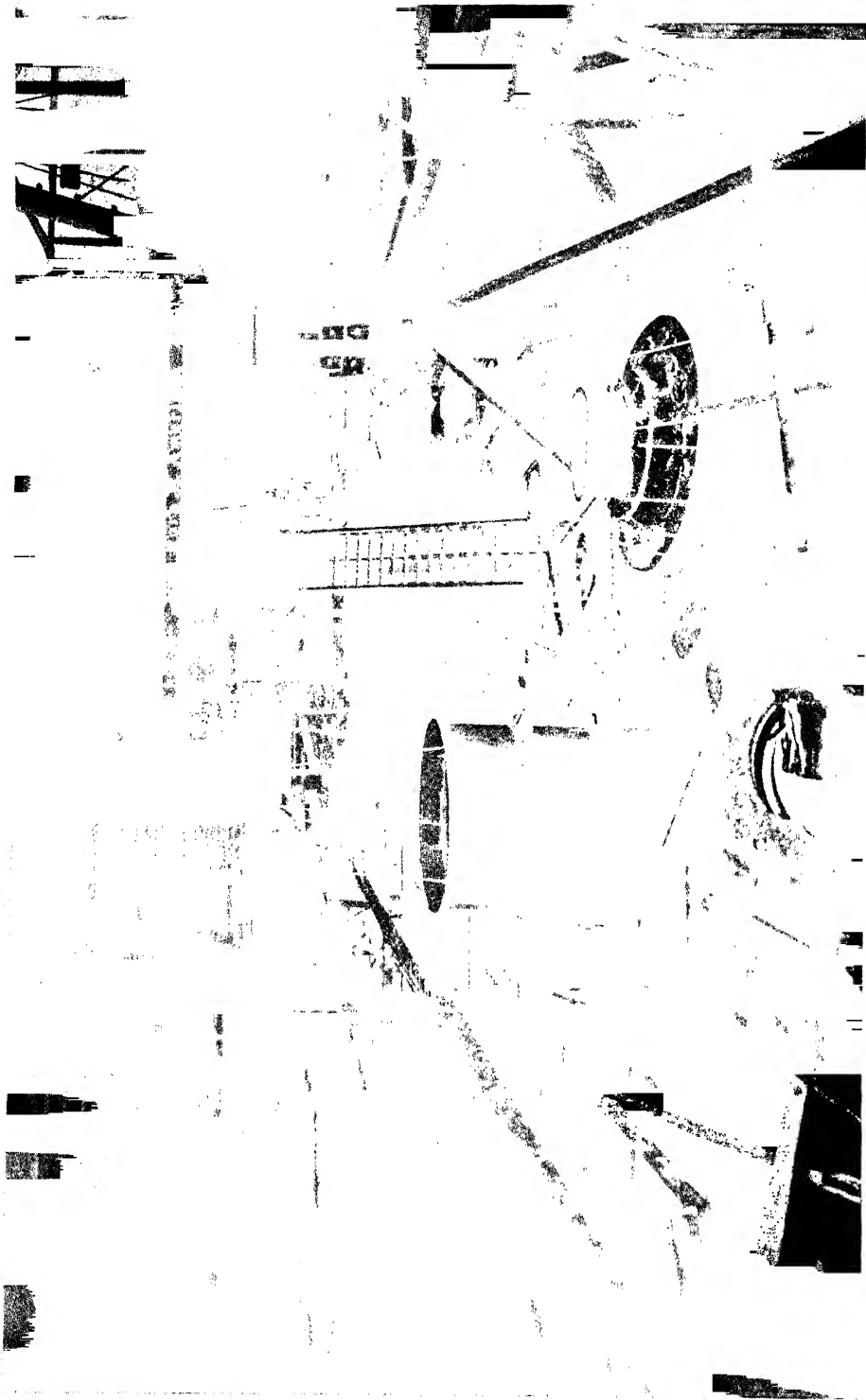
For generations Gotham has had a hand-to-mouth water supply, as is the case with other municipal requirements. The gaunt specter of water famine, with all of its attendant train of gnomes—disease, uncleanness, crippled industries, beggared homes—ever lurked in the shadows of the immediate future.

Finally, there arose a man with a vision and with courage. He foresaw all the evils of water famine and never did the great Roman senator repeat his famous dictum "Delenda est Carthago!" more persistently than did Charles N. Chadwick his doctrine that "New York must have an adequate water supply." One by one he won supporters to his idea—now the Manufacturers' Association, now the Merchants' Association, now the Mayor, now the Governor of the State, now the legislature itself.

It was a long fight. City administration prejudices against a non-partisan continuing board had to be overcome, the Governor had to be won over to the idea that patronage must be left entirely out of the question in the expenditure of nearly \$200,000,000, and neighboring counties had to be induced to surrender their opposition to the project of an outside city exercising the right of eminent domain within their territory and stripping them of large supplies of water.

ENOUGH WATER TO SLAKE THE THIRST OF THE WORLD

But all these difficulties were overridden, and today there flows down to New York from the Catskills an underground river deep enough and wide enough to carry drinking water for the whole world. In size, in length, in the volume of water it will carry, as well as in the cost of construction and the engineering prob-



Photograph from Paul Thompson

PREPARING THE FOUNDATIONS FOR THE WOOLWORTH BUILDING

So tall is the big skyscraper that its foundations had to be sunk to bed-rock through 115 feet of quicksand. The structure rests on sixty-nine piers of partly reinforced concrete. The "beehive" in the foreground was the "working chamber" where the "sand hogs," or men who excavate sand under air pressure, did their digging.



Photograph from Edwin Levick

THE DAILY THRONG IN NEWSPAPER ROW: THE MANHATTAN END OF
BROOKLYN BRIDGE

Brooklyn has a population of nearly two millions, and during the rush hours it seems as if the whole borough wants to cross the Brooklyn Bridge at once. Yet every East River tube and each of the other three highway bridges is doing its best to relieve the crush at City Hall Square.

lems involved, it makes every other aqueduct of ancient and modern times look like a pigmy project. If it were diverted into Fifth avenue, it would be a stream waist deep, flowing at the rate of four miles an hour.

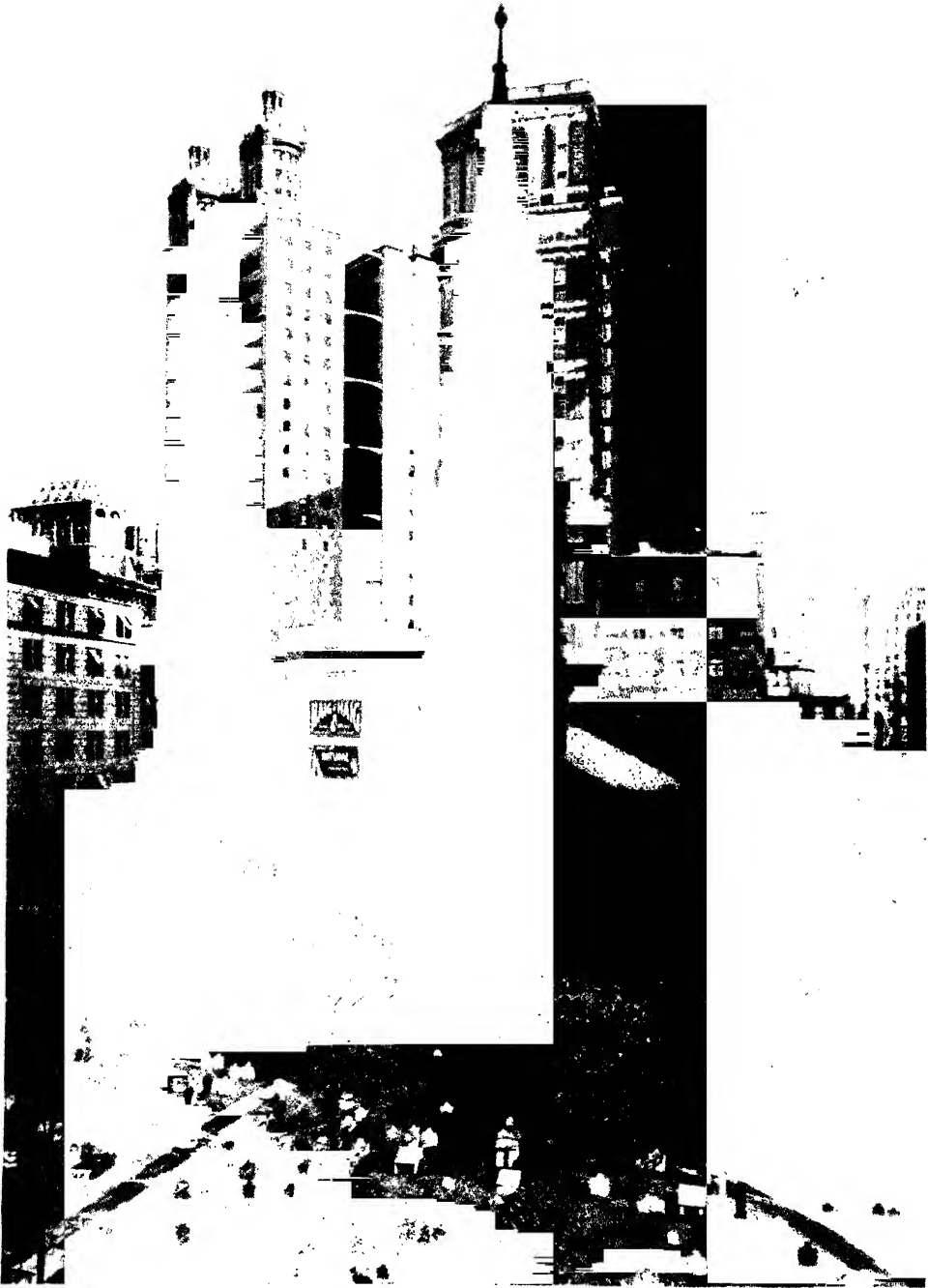
A day's supply would fill a cistern a hundred feet in diameter and nearly two miles deep. Each human being inhabiting the earth could get two and a half pints of water every twenty-four hours from its capacity flow.

Costing for each mile eight or ten times as much as a thoroughly modern double-tracked railroad, to carry a corresponding volume of water thirty great steel pipes four feet in diameter would have been required. Such a pipe-line would have cost twice as much as a tunnel of equal capacity through the eternal bed-rock. It has been estimated that, within the city limits alone, fifteen million dollars

was saved by the types of construction adopted rather than the use of steel piping, to say nothing of the tremendous cost of renewals which the latter would have entailed.

THE BUILDING OF THE CATSKILL
AQUEDUCT

The Catskill system, with all its tremendous capacity, is not expected to bear the whole burden of supplying the metropolis. The Croton Aqueduct, though long since outgrown, is still a sizable waterway itself, for it could supply every inhabitant of the globe with a pint and a half of water a day. As an ally it will be an invaluable aid to the Catskill stream. Between them they will have, when the Schoharie dams are built, an aggregate capacity of eight hundred million gallons a day—half a gallon per capita for the whole world.



Photograph by Paul Thompson

ST. PAUL'S CHURCH AND GRAVEYARD, WITH PARK ROW AND ST. PAUL BUILDING IN
THE BACKGROUND

There is every kind of quarter in New York. Here in its very nerve center is St. Paul's Church, oldest religious edifice in the city, where Washington worshipped. A few blocks away is Judea, with its innumerable six and seven story tenements. One square mile of ground in this Bowery-bisected quarter has a population as great as the 113,000 square miles of Arizona's domain.

To build the Catskill Aqueduct, a vast army of workmen had to be assembled. Construction days reminded one of Panama. The men were well cared for; schools, gardens, recreation centers—everything necessary to make them happy and contented—were provided, with the result that there was not a strike from the inception of the work to the day of its completion. Furthermore, the immense task was completed nearly a year ahead of time and for seven million dollars less than cost estimates.

Let us have a look at the big waterway, starting at Ashokan Reservoir and following it down to the end—Silver Lake, Staten Island, 119 miles away.

The first consideration was the geology of the region. In the Devonian Period of Paleozoic times, estimated at some forty million years ago, all interior New York State was under the sea that submerged most of the continent. Gradually the winds and the rains wore down the outcropping heights, and the waters carried the resulting sands away, depositing them on the floor and shore of the sea. Then there came a rising of the land from the sea, and the winds and the rains again began their long, tedious, but tremendous work of earth sculpture.

Glaciers began to plow their way toward the sea, too, like huge jack-planes, and when they passed through the Esopus region they cut a way for the draining of a beautiful preglacial lake. Thereafter Esopus Creek flowed down to the Hudson.

When New York City looked over all available water supplies, Esopus Valley, about eleven miles northwest of Kingston, was thought to rank first, and was selected. A great dam thrown across this valley would impound the waters of Esopus Creek, restore the lake that had been destroyed millions of years before man looked upon the earth, and give New York a great source of potable water.

THE GIGANTIC ASHOKAN RESERVOIR

And so the building of Ashokan Reservoir began. It was to be a body of water 12 miles long, having an average width of a mile and a shore-line 40 miles long. Its average depth was to be 50 feet, with a maximum of 190 feet. It was to hold

enough water to cover Manhattan Island 30 feet deep—enough to furnish the whole population of the United States with its drinking water, omitting deductions for evaporation and seepage, for a period of ten years!

To impound all this water there had to be a dam built higher than the one at Gatun on the Panama Canal, with several dikes across saddles or gaps where the lake would have broken through the sides of the valley. But that was not all. Thirty-two cemeteries, containing 2,800 graves, had to be removed, 11 miles of railroad had to be relocated, 64 miles of roads had to be discontinued, and 10 miles of macadam road built.

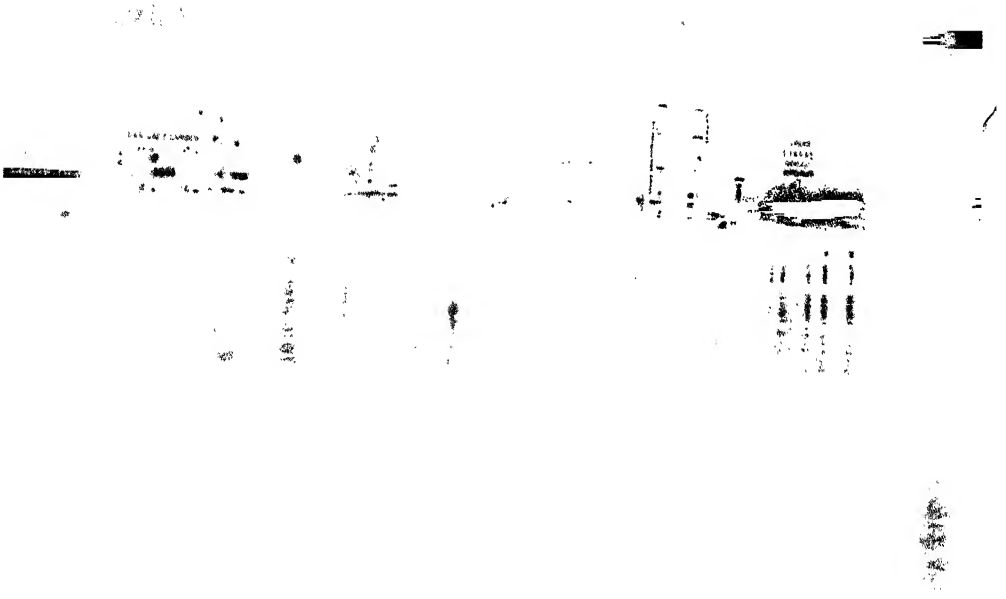
The big dam is 240 feet high, as compared with 105 feet for the Gatun Dam at Panama. At its base it is 190 feet thick. It is 1,000 feet long and is made of tremendous boulders imbedded in concrete.

When the waters began to rise, it soon became evident that not only had a wonderfully utilitarian reservoir been constructed, but that it was also a superbly beautiful lake, a gem like Como or Maggiore. Landscape gardening has added to the beauties of the natural situation. A ten-thousand acre lake bordered by a five-thousand acre sanitary zone, Ashokan is as much a delight to the eye as its waters are a joy to thirsty millions of men.

But Esopus Creek will never be able to keep Ashokan Reservoir full, for although a single inch of rainfall means 113 tons of water to every acre, Esopus watershed is far too small for New York's water demands. So provision has been made for the damming of Schoharie Creek and the construction of an 18-mile tunnel under a mountain. This creek will cease to flow north into the Mohawk, and will be made to flow south into New York's watermain. Also, a Schoharie Reservoir will be built, big enough to store one-sixth as much water as Ashokan.

THE WATER'S AIR BATH

One of the sights at Ashokan is the aëration plant. A bed as long as a city block and half as wide is covered with water pipes four and five feet apart. At



Photograph from the New York Edison Company

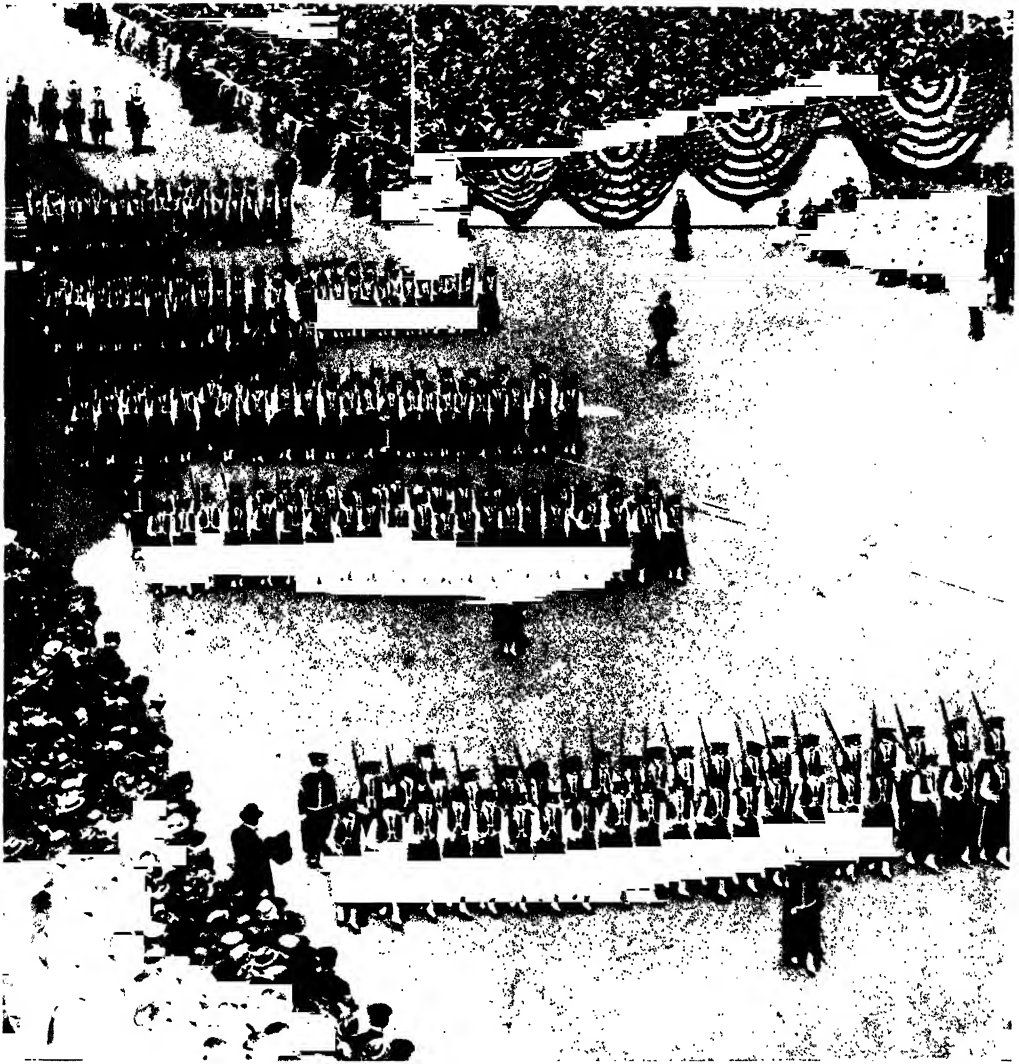
COLUMBUS CIRCLE ON A RAINY NIGHT: NEW YORK CITY

Northward the star of New York's business empire still moves. The financial district is anchored downtown, but "automobile row" has selected as its place in the sun that section of Broadway above and below Columbus Circle, and automobile row has a way of blazing the trail of business into the heart of the residential district of many American cities. Also the gay night throng that once found Times Square the northern boundary of its peregrinations now wanders up Broadway to "The Circle" and Central Park.

intervals of five and six feet in these pipes are nozzles which send up columns of water from forty to sixty feet in the air. Breaking into fine spray, the water descends almost as clean and pure as if it had been raised by evaporation and precipitated again. A fountain three acres in area, surrounded by deciduous and

evergreen trees, is a charming sight and forms a rare introduction to this Gotham-made Como.

After receiving its air bath, Ashokan water is ready to begin its long journey to New York. The aqueduct first leads it to Kensico Reservoir, 75 miles away, and on the opposite side of the Hudson.



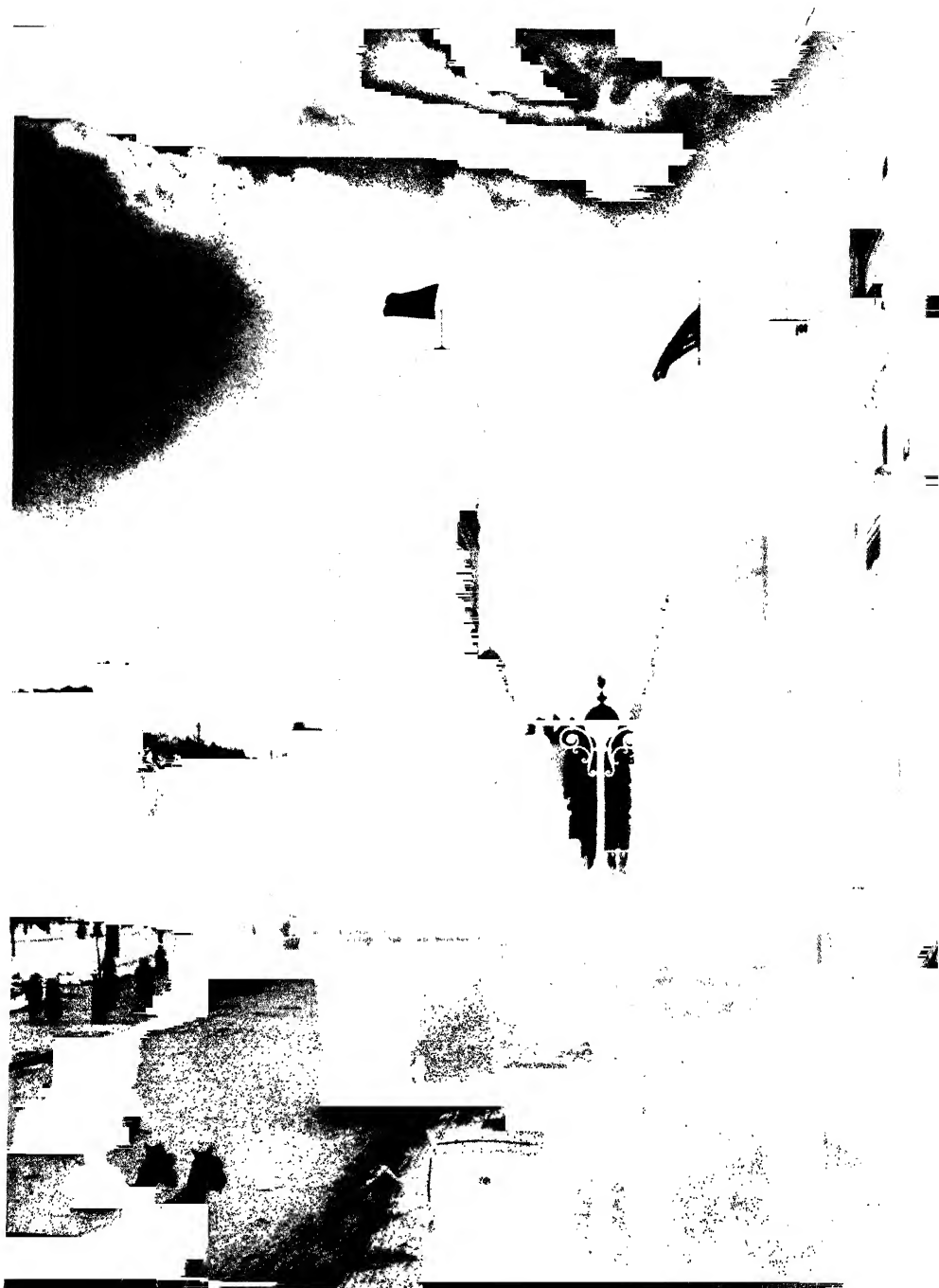
© Paul Thompson

WOMEN POLICE PARADING DOWN FIFTH AVENUE: NEW YORK CITY

New York's police department faces a tremendous task. The city, because of its great size, the indifference of its citizens to the comings and goings of their neighbors, and the opportunities afforded for having a good time suited to every taste, attracts alike the criminal and those on pleasure bent from everywhere. The war has made a heavy draft on New York's conservators of law and order, but women are proving that they can patrol a beat or collect fares in a street car as well as men. Thus does the economic emancipation of woman receive another boost.

Between these two reservoirs four kinds of construction were used. Over approximately level ground, the cut-and-cover method was used—a great trench was dug and in it was built a horseshoe-shaped conduit of concrete. Where hills interposed, instead of going around them, grade tunnels were built through them.

When valleys, creeks, and rivers came in the way, there were three courses open: great masonry aqueducts like those of ancient Rome could be built; steel pipe-lines could be laid on the floor of the valleys; inverted siphons or pressure tunnels could be dug far below the surface through solid rock.



Photograph from Norman Thomas and W. W. Rock

MADISON SQUARE: THE FLATIRON BUILDING AND FIFTH AVENUE BUILDING

Where once stood the Fifth Avenue Hotel, with its "Amen Corner," now towers a great office structure, the Fifth Avenue Building, and the Hoffman House, where the Democrats of the country used to foregather, is only a memory. Where society once reigned supreme, now there are cloak and suit lofts, and Madison Square is little more than a way station twixt the uptown and downtown business districts.

A lofty masonry aqueduct was open to danger of destruction; pipe-lines were both expensive and liable to leaks; the tunnel was decided upon. In some places these tunnels go very deep, so deep that the water exerts as much as three and a half tons pressure per square foot.

When the aqueduct builders came to the Rondout Creek Valley they met with a discouraging situation. They found a very poor quality of rock under the valley, with many faults. Their drills slipped through into caverns of unknown depths, and at one place they encountered a spring deep in a rock fissure, which had a flow of 2,000 gallons a minute. There was sulphur present, also, and its fumes seriously inconvenienced the workmen. However, enough grout was put into the spring to drive it out of their way; with channel rings and concrete the rock was made strong where Nature had made it weak; and they steered clear of the caves. This tunnel was only 727 feet below grade, and little attention was paid to it by the public.

CARRYING WATER BENEATH THE HUDSON

When the Hudson crossing was reached, where the tunnel goes down so deep that the Woolworth Building placed on top of the United States Capitol and surmounted by the Washington Monument would leave only the capstone of the latter showing above the water surface, New York was gloomy and fearful. Failure of the undertaking was freely predicted. Nevertheless, the construction of the spectacular Hudson tunnel was a far easier task than the unnoticed one at Rondout. The Hudson is tunneled 45 miles below Ashokan Reservoir.

In the building of this under-the-river tunnel, it was first necessary to ascertain exactly the lay of the solid rock below the river. First, an effort was made to drill down to the surface of bed-rock with drills mounted on scows. But that was a failure. Drills were lost and all sorts of hindrances encountered. Then it was determined to dig a shaft at each side, about 300 feet deep, and from these to drill two V's under the Hudson, one with a broad and the other with a sharp angle. In this way the engineers gained the necessary data about the rock formation.

Diamond drills were used. These drills are circular tubes, the lower ends of which are studded with seven black diamonds, costing about \$100 each. The drill cuts through the rock like an apple corer through an apple and brings the core to the surface with each stratum in the position in which it was found.

Thus the position of the rock was revealed and its density determined. The engineers ascertained that they could put their tunnel under the river nearly 1,400 feet beneath the surface of the water.

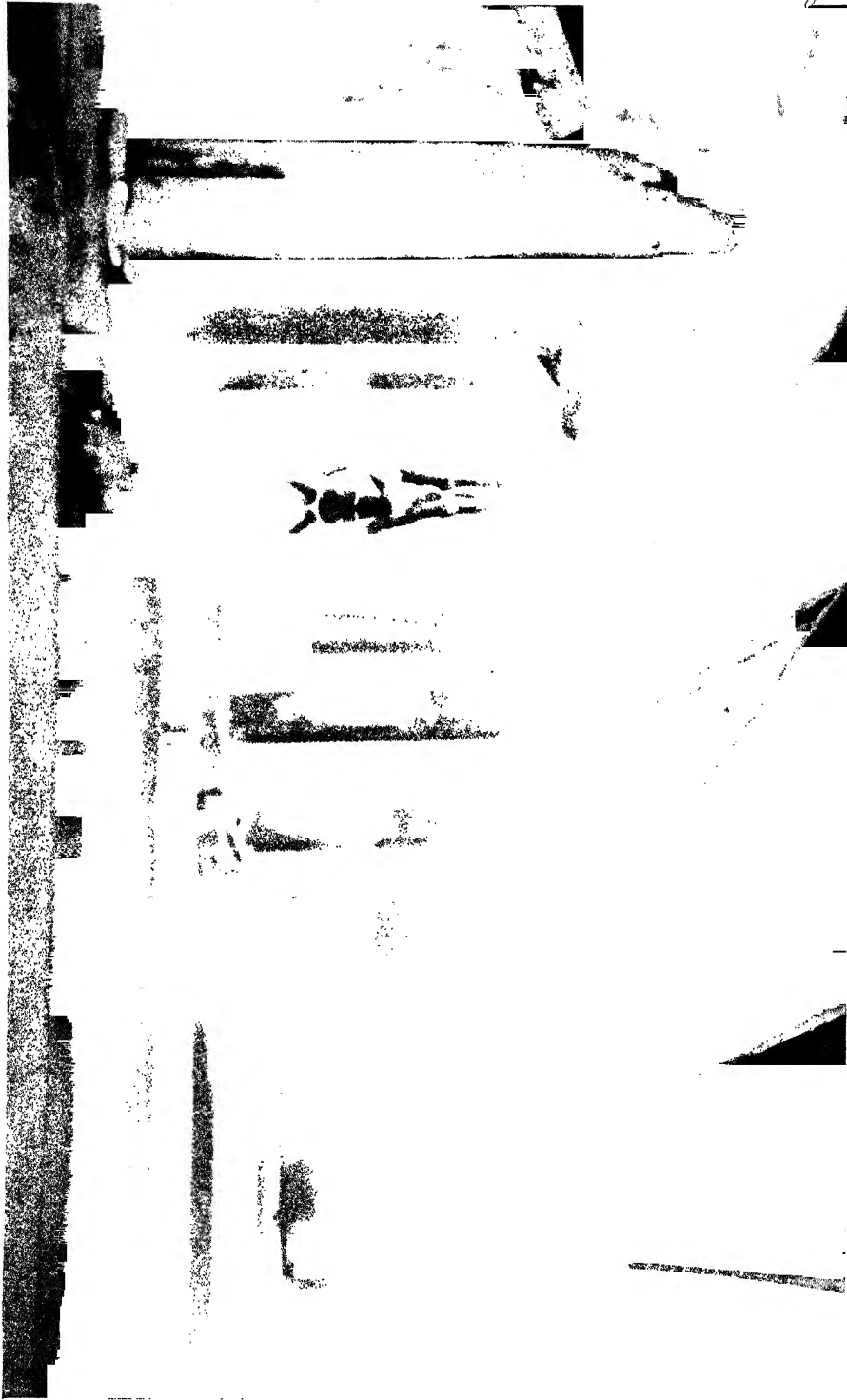
AQUEDUCT BUILDING, ANCIENT AND MODERN

Engineering has progressed in great strides since the days when the Romans were building aqueducts. When the Aqua Claudia was under construction a tunnel under a mountain three miles long was necessary, and the chief engineer started work at both ends. He was captured by brigands, and when he was finally liberated he found that his two digging parties had missed one another entirely and were excavating two tunnels instead of one. When the Hudson tunnel was bored the two parties met and were not half an inch out of the way, although the undertaking required the sinking of two pits 1,114 feet deep, from the bottoms of which the tunnel operations were started.

The Hudson crossing is about half way between West Point and Newburgh, at Storm King Mountain. Thirty miles nearer the city, on the east side of the river, is Kensico Reservoir, with a capacity of thirty-eight billion gallons—22 gallons for every inhabitant of the earth.

This reservoir is four miles long and from one to three miles wide. The water is impounded by a dam thrown across the Bronx River, one of the finest structures of its kind in existence. A third of a mile long, and 307 feet high, it is 235 feet thick at its base and 28 feet thick at its crest. The exposed portion of the down-stream side is made of huge granite blocks.

Above Kensico there is what is known as a coagulation plant. Here provision is made for treating muddy water with a harmless coagulant. In flood periods silt is brought down from the watersheds.



Photograph by Paul Thompson

A PROSPECTIVE GOLD MINE BENEATH BROADWAY

The problem of building new subway lines in New York is a tremendous one. For instance, Broadway, at Canal street, is only ten feet above sealevel, and the excavation had to be carried down forty-seven feet. Great quantities of water were encountered and at one time twenty million gallons a day, enough to supply a city of 150,000 inhabitants, had to be pumped out with great care, so that no sand was carried along. Because of the head of water, large masses of concrete had to be introduced to keep the subway from floating. Where it crosses the Hudson tubes the two systems had to be linked together with a concrete saddle.

The chemical causes the clay to coagulate and settle to the bottom of the reservoir while waiting its turn to pass into the city-bound watermains.

WHERE THE WATER IS "GASSED"

At the outlet of the Kensico Reservoir there is a chlorination plant. Here the Water Department practices the German art of "gassing" on the germ tribe. A very small quantity of this gas will kill many millions of germs. Nowhere else in the world, except on the battlefield, is "gassing" practiced as much as in the battle against the disease germ armies that seek to invade New York via its water supply.

After leaving Kensico Reservoir, the Catskill Aqueduct flows another 17 miles to Hill View Reservoir, used for equalizing day and night consumption of water. This brings the water to the metropolis, where the great 18-mile tunnel through solid rock under the city begins. This tunnel is the longest of its size in the world.

Starting at Hill View Reservoir it is 15 feet in diameter through Harlem and under Harlem River to 135th street. It is within three inches of being as large in diameter as the Hudson Terminal tunnels under North River. It crosses the Harlem between High Bridge and the Polo Grounds and extends through Central Park and Madison Square to a point between Williamsburg and Manhattan bridges, where it dives under East River. On the Manhattan bank of the river there is a shaft in which the Woolworth Building could be buried, so far as depth is concerned.

HEEDLESS OF HUMAN MOLES BLASTING THEIR WAY BENEATH THE CITY

After passing under the river the tunnel rises to the surface in Flatbush, where it connects with the 5-foot-6-inch Brooklyn main. Hence its water runs on to the Narrows, where a three-foot ball-and-socket pipe-line, with joints calked with 300 pounds of lead, was laid in a trench cut in the floor of the inlet. This line carries the water to Staten Island and into Silver Lake Reservoir, 119 miles from the intake at Ashokan.

Here we find how much an uncon-

sidered thing in every-day experience may count in a big project. Take a U-tube and put water into it. The water rises to the same level in both sides. But, although Ashokan and Silver Lake are the two terminals of the figurative Catskill U-tube, their waters by no means reach the same level. The surface of Silver Lake is 362 feet lower than that of Ashokan Reservoir, because of the friction in the big waterway. When it is remembered that a column of water 362 feet high exerts a pressure of more than a thousand tons per square foot, one can appreciate the amount of friction the water encounters in its journey to the city.

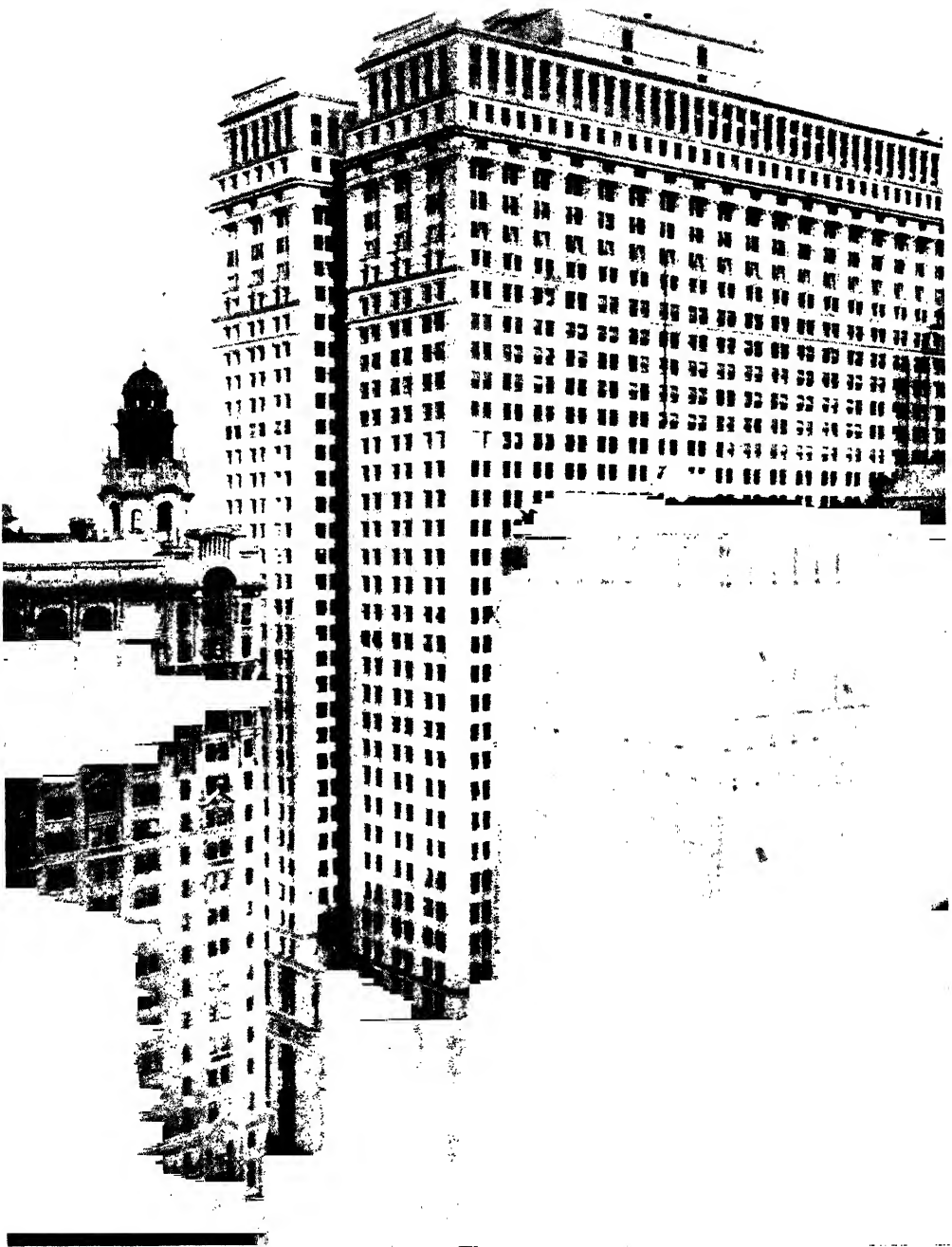
Although, on an average, five tons of dynamite were exploded daily during the long period in which the city tunnel was being built, New York might never have known that rock-defying human moles were boring their way through the big town, from the Yonkers line to Flatbush, except for the shafts sunk from the surface at convenient spots.

URBAN TRANSPORTATION

As a completed project, the Catskill Aqueduct stands as one of the wonders of the engineering world. With a length of 119 miles, with a capacity that exceeds the combined flow of all the aqueducts that imperial Rome ever built, with 35 miles of tunnel sunk deep in the primeval rock, the great subterranean stream that brings the life-giving, health-protecting, industry-quickenning waters of the mountains to the people at the gateway to the seas represents the indomitable spirit of a municipality that is as virile as it is big, ready to shoulder any burden its unceasing growth imposes upon it.

In no other phase of its complex life has New York felt so acutely the problems that its size and peculiar geographic situation involve as in the matter of urban transportation. With its own population supplemented by the army of commuters living in Jersey, on Long Island, and up the Hudson, twice as many people are transported in a single day within the confines of Greater Gotham as are moved by all the steam railroads of the United States.

Go to Grand Central Station during the rush hours of the morning and after-



Photograph by Paul Thompson

"THE HOUSE OF A THOUSAND WINDOWS": THE EQUITABLE BUILDING, THE LARGEST OFFICE STRUCTURE EVER BUILT

On the average square mile of Manhattan territory there dwells a population nearly equal to that Albany, Des Moines, Fort Worth, or Lynn. To provide elbow room for the business element in a city of such density the skyscraper is a necessity. One of these big buildings demands from fifteen to twenty ten-car subway trains to care for the coming and going of its population. If the big city's office buildings were limited to eight stories they would occupy the major portion of Manhattan.

noon, and you are easily convinced that beyond the Bronx live a million people whose bread-winners work below, Harlem River. Go to the Pennsylvania Station at the same time, and you see the wage-earners of tens of thousands of Long Island and Jersey homes coming or going. And at the Hudson Terminal one is ready to conclude that half of Jersey's homes have wage-earners and salaried folk who work in Manhattan and live in Rahway, Orange, Montclair, or somewhere down Jersey way.

A new skyscraper lifts its head toward the blue and straightway 15,000 people find working quarters. Let us load these workers on subway trains and see what it means. A ten-car subway train can carry a thousand people to or from work. It takes fifteen such trains to handle the new skyscraper's tenants. And it takes twenty-six minutes to put fifteen such trains through the necks of the traffic bottle—as at 42d street.

In no other city in the world do as many people live out of walking distance to their work as in New York. Manhattan Island is 13 miles long and only a mile or so wide, and downtown Manhattan is the habitat of the skyscraper and not of the home, except on the East Side. The result is an unbelievable amount of travel. Subway, elevated, and surface cars carry two billion people a year. Every day 30 tons of nickels flow into the coffers of the rapid transit and surface lines. Every year 200 car loads of "jitneys" are harvested from the ride-buying public.

THE NEW YORKER A GREAT RIDER

If New York had only to meet its annual increase in population, that in itself would be a sizable task; for taking care every year of the comings and goings of a new population equal to that of Wyoming were no mean undertaking. But that is only the beginning of the big city's transportation troubles. The people ride more frequently with every extension of facilities.

When New York had only its surface lines to depend on, Mr. Average New Yorker took 147 rides a year. Then came the elevated and he began taking 215 rides a year. When the first subway

went into commission, he jumped the annual number of his rides to 298. Now he is using the cars more than ever—is this Mr. Average New Yorker—with some 348 rides a year to his credit. How many rides he will take when all the new subways and elevated lines are completed can only be surmised, but the extensions under way will enable the overhead and underground systems to handle three billion passengers annually without aid from the surface lines.

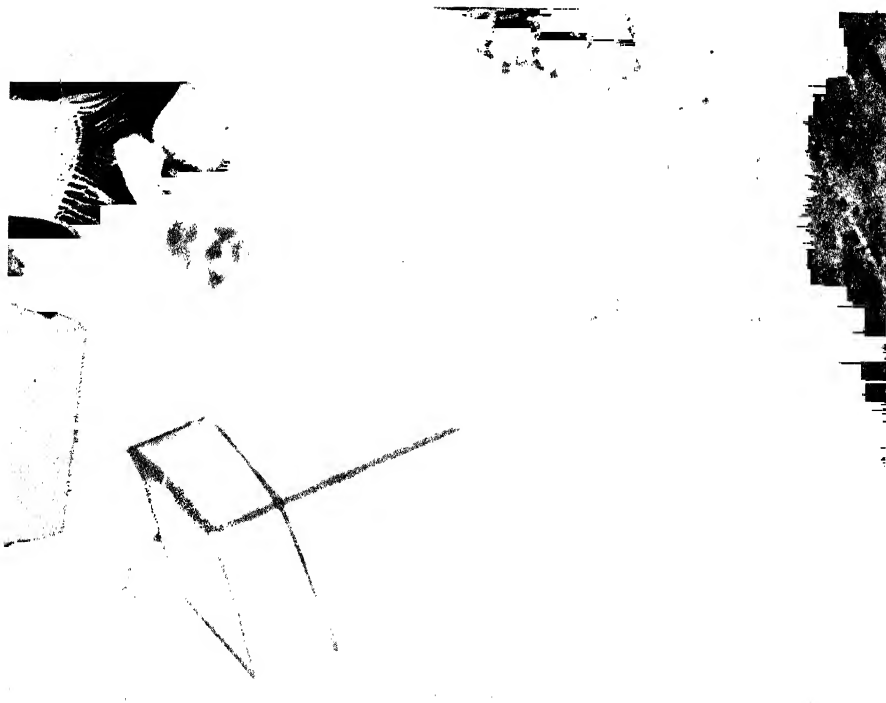
Crowding her debt limit to the utmost to meet other conditions imposed by her extraordinary growth, New York was financially "up against it" when traffic demands called loudly for new facilities. She was not willing to have new subways built and owned by private enterprise to compete with those already in operation and owned by her, though leased to an operating company; and yet she was not able to finance the extensions without outside help. Meantime, subways that were built to handle 400,000 people a day were approaching the time when they would be called upon to move 1,200,000 every twenty-four hours.

FURTHER EXTENSION OF SUBWAY AND ELEVATED LINES

So the city made a deal with the two rapid-transit companies to "go fifty-fifty" with them in building all subway extensions and to allow the companies to extend the elevated lines.

The result is that instead of one line up Manhattan, on the East Side to 42d street and on the West Side above that street, there will be, when the present project is completed, a line all the way up the East Side and another up the West Side, with branches into the boroughs of Queens, Bronx, and Brooklyn.

And yet, with all the effort that has been made to anticipate the city's traffic needs, every New Yorker feels that there are other needs ahead. Already there is agitation for a through line from downtown to uptown that will make even "rapid transit" a slow phrase. It is believed that the time is not more than a decade distant when it will be imperative to establish an entirely new sort of service—a "high-speed service." This may be given by a line built under one of the



A FUTURE AMERICAN CARRYING HIS OWN BAGGAGE AT
ELLIS ISLAND

Out of such plucky raw material as this has New York made itself the
metropolis of the New World

Photographs by Paul Thompson



HERMES TYPIFYING LABOR: A PART OF THE STATUARY OVER
ONE ENTRANCE TO GRAND CENTRAL STATION

Note the comparative size of the artisan standing on the thigh of the
figure as he works

avenues east of Fifth from Bronx to Battery, upon which trains will run which will make only three or four stops between the Harlem River and the financial district.

THE BRIDGES OF MANHATTAN

The "river ring" around Manhattan Island has long forced expansion along abnormal lines, resulting in a shoe-string borough instead of a compact one. The center of the business district is at one end of the borough and not in its heart. But, at last, the city is going to grow like other cities, rivers or no rivers. The Harlem presented no serious obstruction to the plan. Narrow and in a deep valley, it was readily bridged. But East River and North River were different propositions.

It costs millions upon millions to build a big bridge like the Brooklyn, the Williamsburg, the Queensboro, or the Manhattan, but one by one, in the order named, these great structures, towering high enough above the river to avoid interference with navigation, have been thrown across, in order to permit the metropolis to occupy its natural territory on the west end of Long Island.

These bridges have cost the city nearly one hundred million dollars. They have an aggregate length of nearly six miles and are crossed by eight hundred thousand people every day. They could carry that many persons every hour if they were used by the maximum number of elevated, subway, and surface cars which they can accommodate and if each car were loaded to capacity.

SIXTEEN TUBES UNDER THE RIVER TO RELIEVE THE BRIDGES

Although Manhattan Bridge is the world's greatest suspension bridge, and although its neighbor bridges in conjunction with it constitute the greatest aggregation of water-spanning structures in existence, they are wholly unequal to the task of caring for the tide of humanity that ebbs and flows during rush hours between Manhattan and Long Island.

Eight tunnel tubes have been built to share the burden; but in spite of these reinforcements the bridges still carry an increasing number of passengers every year. Eight other tubes are now eating

their way through the silt of the river's bottom, and when they are in commission there probably will arise a necessity for as many more.

Bridged over and tunneled under, East River has heard the verdict of the indomitable metropolis, that it can no longer force the city to grow in shoe-string shape.

Not less serious than the blockade imposed by East River against the eastward expansion of the city is the lack of north and south streets in Manhattan. With the spread of the motor-car, the city finds the comparatively few-and-far-between avenues that run north and south inadequate. The men who laid out the city made the east and west thoroughfares close together and those north and south far apart, producing oblong blocks instead of squares. Yet so long have the north and south thoroughfares become that a vast amount of travel must be concentrated in a few avenues.

THE AVENUE PROBLEM

Many suggestions have been made for overcoming this congestion. One was to raze a way through Manhattan, driving a new avenue into the great breach. Another was to double-deck one of the avenues, using the second level for light vehicular traffic. Still another proposal is a subway for heavy trucks. It is the hope of the city that the bridge and tunnel conquest of East River will make the day a little more remote when the solution of the problem of providing new facilities for north and south vehicular traffic will become imperative.

The problem of getting across North River is almost as acute as has been that of overcoming the obstacles interposed by East River. Prior to the recent order of the Railway Administration, only one of the many trunk lines that approach New York from the West and South entered the city. All the others discharged their passengers in Jersey-side stations, where water and rail meet.

Up to the time that the present Secretary of the Treasury and Railway Administrator, William G. McAdoo, showed how to cut the Gordian knot of an unbridgeable river by going under it instead of over it, the ferry boat was the



THE AERATION PLANT AT ASHOKAN RESERVOIR

Photograph from Edwin Levick

This plant was built to give New York's water an air bath before its entrance into the big aqueduct. It consists of a concrete pool as long as a city block and half as wide, covered with water pipes laid in squares four by five feet. At intervals of five and six feet are nozzles through which the water is driven from forty to sixty feet into the air in the form of fine spray. It descends perfectly oxygenated. A fountain three acres in area surrounded by deciduous and evergreen trees is a delightful sight and forms a rare introduction to this Gotham-made Como (see text, page 31).

only line of communication between the west bank of North River and the east bank. Now, however, there are six tubes under the Hudson, two belonging to the Pennsylvania Railroad and four to the Hudson and Manhattan Subway System.

Owing to the growth of the motor-car industry, thousands of trucks and passenger cars are demanding direct communication between Manhattan and New Jersey. To meet this need it is proposed that a vehicular traffic tunnel be constructed under the river, and unless New York breaks all analogies of her history, such a tunnel will be in operation within two decades.

THE WORLD'S LARGEST CANTILEVER BRIDGE

When the Pennsylvania Railroad was halted at Jersey City by North River, its one great ambition was to get into New York. Finally the McAdoo tunnels showed the railroad how, and it not only entered the city, but through it and under East River to Long Island.

Then it conceived a new ambition—to get out of New York and into New England railroad territory. It attained that end by utilizing its Hudson tunnels into New York, its East River tunnels into Long Island, and a new bridge out of Long Island and into the New York-New England mainland. A great cantilever bridge, the largest in the world, swings its graceful way across East River from Long Island to the Bronx mainland, where the long coveted connection with New England railroads is achieved.

Passengers from the South and West to New England thus dive under the Hudson, under the city, under East River, and come up on Long Island. Then they face about and speed over the river under which they passed only a few minutes before.

This Hell Gate structure is one of the most beautiful bridges in the world. Sweeping in a broad, graceful quarter-circle from the Long Island shore, across Ward's and Randall's islands to the mainland, it has a splendid arch that matches its curve and combines with the latter to make the structure one of unusual symmetry. The bridge and its approaches cost \$27,000,000. Its arch, the longest in

existence, carries a concrete deck on which is laid a four-track railroad.

HOW NEW YORK HANDLES ITS FREIGHT

A congestion of population that at places reaches 3,000 to the acre and at others concentrates as many people as live in the whole State of Nevada within the limits of a single square mile, means not only overtaxed passenger transportation facilities, but overburdened freight movement as well.

Ride from Danbury, Connecticut, to Plymouth, Massachusetts, from New Bedford, Massachusetts, to Bangor, Maine, thence to Burlington, Vermont, and down to Boston. You will naturally conclude that New England is preëminently a manufacturing region. Yet the value of New York's manufactured products is nearly as great as that of the output of all New England's factories.

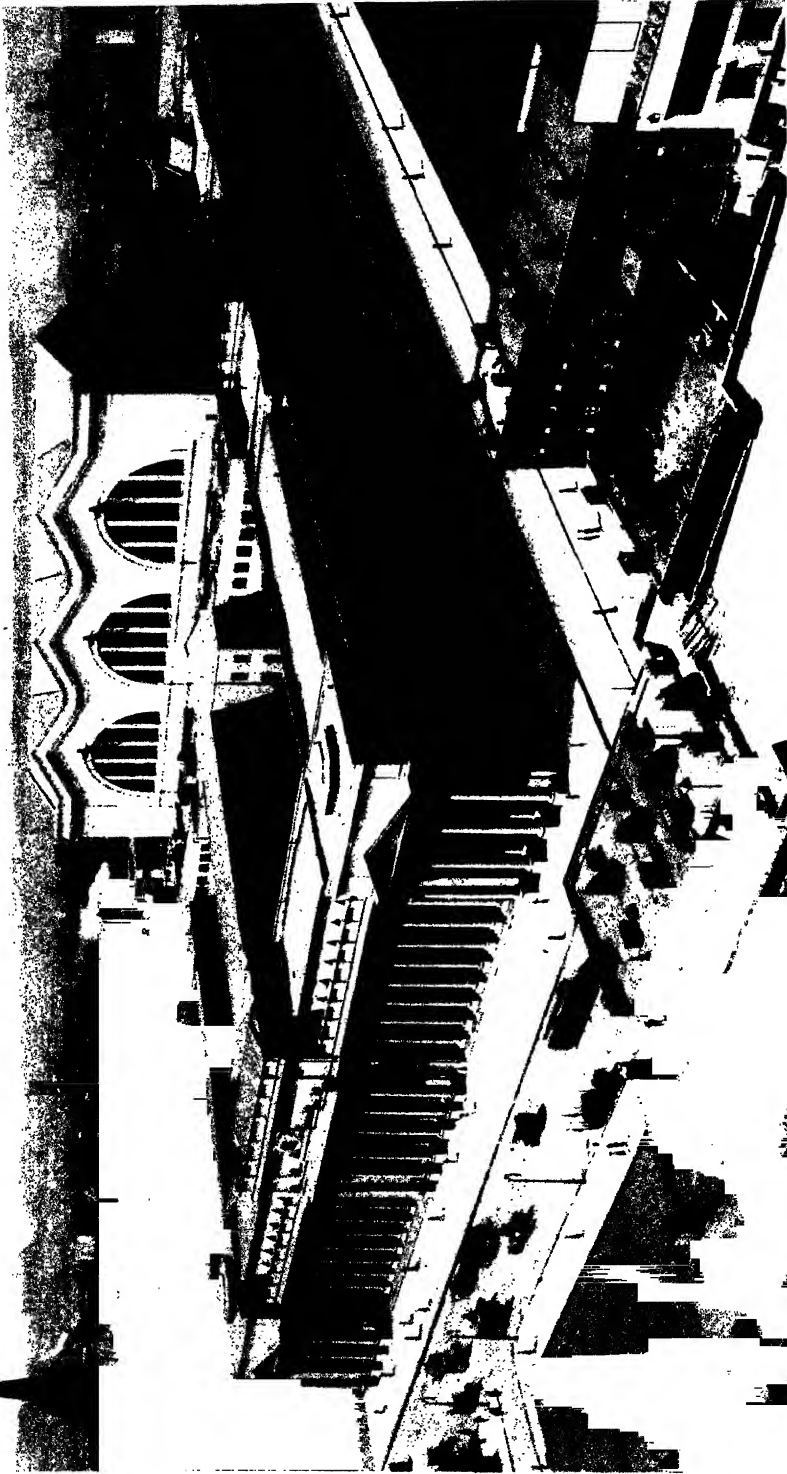
Well might the freight-handling facilities of any city stagger under such a load, especially a city whose main borough is only a narrow tongue of land with a broad river on each side, a sea at one end, and a small river at the other.

WHAT NEW YORK EATS

It takes a tremendous amount of food-stuffs to supply nearly six million people. Every week the city eats 200 trainloads of food. It must have 2,160 carloads of cereals and flour, 2,000 carloads of milk, 1,636 carloads of vegetables, and 1,168 carloads of meat, dressed and on the hoof. Picture a food train 76 miles long, drawn by 200 engines. That is New York's weekly food supply.

The handling of manufactured goods and foodstuffs is only the beginning of the city's freight-moving problem. Her harbor is the gateway between New England and a major portion of the remainder of the country. Into the "down East" manufacturing district pour raw materials and coal through New York, and out of that district come the finished products. Billions of dollars worth of stuff must be lightered back and forth through Gotham waters.

But these are merely the problems which the movement of domestic freight present to New York. As pointed out in the in-



PENNSYLVANIA STATION: NEW YORK CITY

With its Doric façades designed to suggest Roman temples and baths, and with its grand stairway and its general waiting-room constructed of travertine from Tivoli, Italy, and modeled after the Baths of Caracalla, this station is indeed at once a monument to transportation and to Roman architectural genius. The highest track that runs into the station is nine feet below sealevel. Millions of people pass its portals every month.

roduction, the value of the exports from this port is greater than the value of the exports of Asia, Africa, and Australia combined. Think of the thousands of cargoes which leave these continents. And then add the vast international trade between the countries of Asia, as Japan with Russia and China. Yet all this intercontinental and international trade combined does not amount to as much as the outgoing trade of the port of New York.

The incoming trade, also, is vast in volume—South America, Africa, and Australia combined are far behind New York in the comparison of import values.

With such an unmatched combination of freight-moving demands, what wonder is it that even the supercity falters? Many remedies have been proposed. Ward's Island, planted in the throat of East River, together with Hell Gate, stands as an obstruction to through East River traffic. It has been proposed that great ship terminals be built on the shores of the Bronx above Hell Gate, thus providing entirely new docking territory. Already work in this direction has been started and some extraordinary difficulties have been encountered on the marshy shores, where the mud is so fluid that it has to be moved by hydraulic dredges and deposited behind retaining walls.

Congress has just enacted a law providing for the deepening of Hell Gate channel to 40 feet. This will give the Bronx a splendid water-front of its own.

NEW YORK'S GREAT WATERFRONT

New York has 578 miles of waterfront, of which 450 miles are available for pier construction. The harbor is far superior to that of London or of Liverpool. The Thames is a brook beside the Hudson, and requires constant dredging. Liverpool has a tide of 30 feet range, with enormous watergate construction required to overcome it, while New York Harbor is practically tide free.

In so far as docking space is concerned, New York can expand her harbor to a capacity equaling the combined dockage space of any five of the main ports of Europe.

On the Manhattan shore of North River, between 36th and 39th streets, the

city has begun the construction of a series of gigantic piers for modern leviathans. These piers are 1,050 feet long, with slips 350 feet wide and having a depth of 44 feet at mean low water.

Construction preliminaries for these piers reminded the onlooker of the raising of the *Maine* in Havana Harbor. A huge cofferdam, the largest ever made, was constructed by driving steel sheet piling around the space to be excavated. Then the water was pumped out of the area enclosed by the cofferdam and work was begun on the building of the piers.

The relief of the congestion beyond the piers is one of the main problems of the port. A series of elevated freight stations, situated behind these piers and accessible to all railroads, just as are the Bush terminals in Brooklyn, has been proposed.

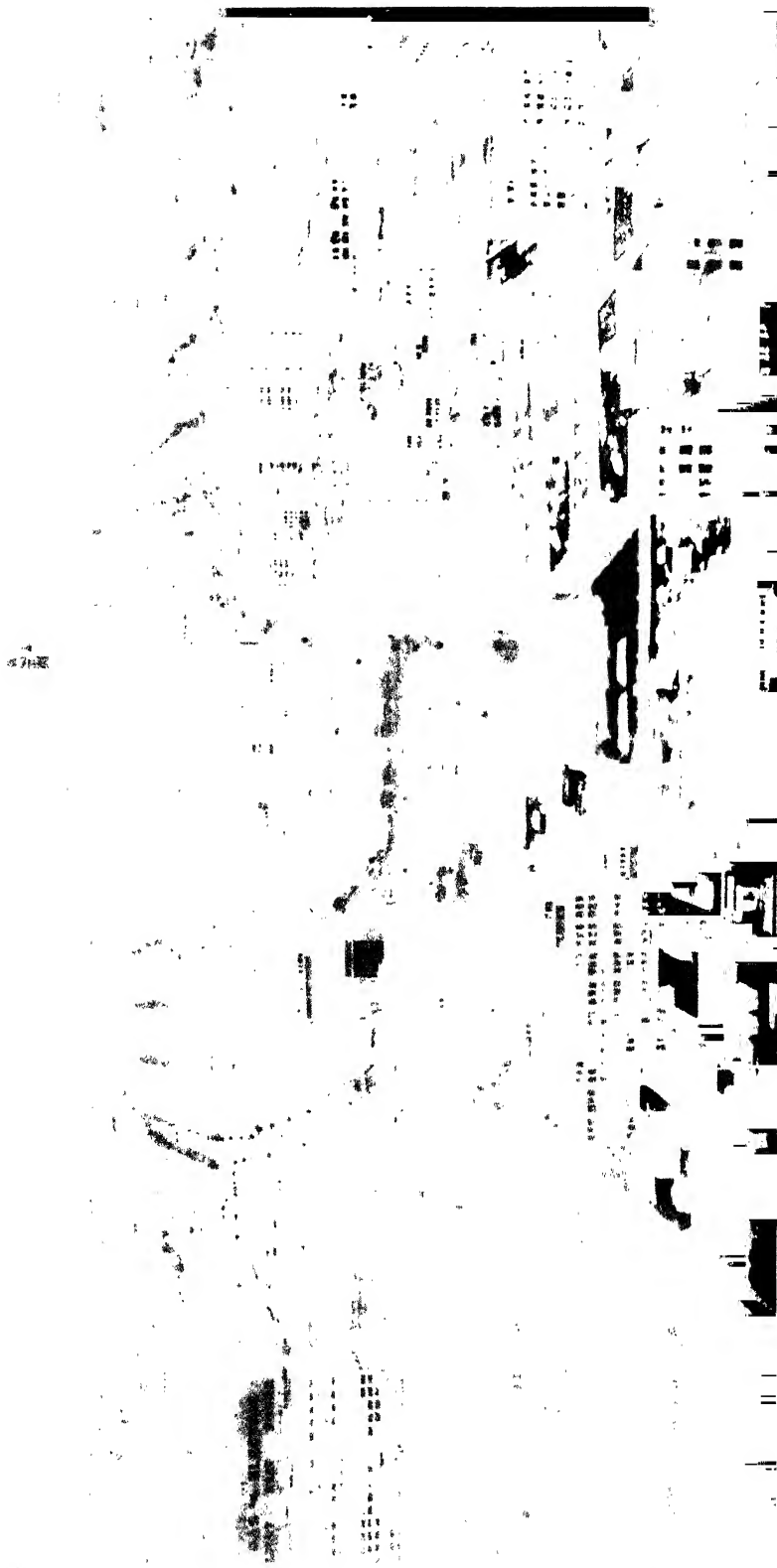
THE POLICE AND FIRE DEPARTMENTS

One hesitates, in an article of magazine length, even to refer to the police and fire departments of the metropolis, for each is a story in itself and defies successful summary in a few paragraphs.

One who stands at a busy corner like Fifth avenue and Thirty-fourth street, when Upper Manhattan and the Bronx are making their morning migration to the downtown district, and watches a traffic policeman handle the inevitable congestion, appreciates two facts—first, that the New York police force faces tremendous problems, and, second, that it solves these problems in a way that is admirable.

The city spends as much for the maintenance of law and order alone as the republic of Colombia spends for all national purposes. If all the people—men, women, and children—in Nevada's largest city were suddenly to turn policemen, they would make a force just about equal to that of New York.

We read often of the failures of the New York police force, but those who realize the vastness of the population, the unusual proportion of criminals which a supercity attracts from the outside world, and the opportunities men have for losing themselves in a community so big and so busy that no one bothers about the affairs of his neighbors, understand quite



Photograph from the New York Edison Company

THE NIGHT GEOGRAPHY OF NEW YORK'S DOWNTOWN DISTRICT

This owl's-eye view of Manhattan south of Madison Square antedates the air-defense order of the month of June and was not taken on any of last winter's lightless nights. Far away in the remote background is the light-flooded Woolworth Tower, with the dome of the Singer Building as a satellite. In the left background twinkle the lights of Brooklyn Bridge. The broad, curving thoroughfare to the left is Fourth avenue, where it becomes the Bowery. In the distant background in the upper right-hand corner one may see the feeble rays of the lights on the Communipaw water front. In the middle distance is Union Square, with Broadway leaving it parallel to Fourth avenue.

well that a police force must be highly efficient to render such an accounting of its stewardship as the New York force is able to give.

The fire department, dealing with a congestion of population such as is to be found nowhere else in the world, protecting the loftiest buildings in the world, guarding some of the most inflammable industries in existence, has a wonderful work to do. Some of the big buildings house as many people during their working hours as reside in North Dakota's largest city; and some of these buildings go down as many stories into the ground as "skyscrapers" rise into the air in many cities.

With the world's busiest waterfront to protect, with industry's most inflammable products to guard from harm, with high buildings and congested tenements to defend against fire disaster, it is little wonder that New York has endeavored to make her fire department the last word in efficiency, with the most modern apparatus, the most thorough discipline, the most unceasing and intensive training for its personnel.

ITS SHOPS AND HOTELS

New York is indeed a many-sided city. It has more facets than a diamond, each fascinatingly interesting, each superlative in its own way. Its amusements, upon which it spends \$60,000,000 a year, are a story by themselves. A single theater has had box-office receipts in one season amounting to \$1,500,000. The opera has brought in some \$10,000,000 in one season, and concerts have added as much more.

Then there are the hotels! Nearly 300,000 people go in and out of the city every day, and a third of them find abiding places in the hotel district. Every night the hotel and restaurant food and drink bill is a million and a quarter dollars. A single hostelry handles more telephone calls a year than the entire kingdom of Bulgaria. The city drinks fourteen million glasses of beer and twelve million glasses of soda water every twenty-four hours and pays \$1,300,000 for them. It spends \$100,000 a day for ice-cream.

No picture of New York would be even passably complete that did not turn

aside from the big problems of a super-city and the story of their solution long enough to tell something about its shopping districts. Perhaps no other metropolis in the world has so many people who are "the glass of fashion and the mould of form," and Gotham has a store for every pocketbook and every taste, from the open-air shops of the East Side, where the hobo can outfit himself in second-hand rags for a song, to the exclusive specialty stores on Fifth avenue, where only those with big bank accounts and expensive tastes are catered to.

Once New York went downtown to shop, but now shops have come uptown to meet New York. One by one, nearly all of the big stores below Thirtieth have gone uptown or out of business, so that of the establishments of merchant princes which formerly graced the region of Fourteenth and Twenty-third streets, only Wanamaker's remains, and even such a name with which to conjure barely suffices to hold the crowd that long has filled that big emporium.

More and more New York is drifting away from the department store and to the specialty shop. Fifth avenue from Thirtieth street to Fifty-ninth is the specialty shopping district. An ideal district it is, too, for here lumbering trucks and evil-smelling meat wagons may not come, and élite New York and the out-of-town shopper can shop and have afternoon tea undisturbed by such traffic.

Rents are high, and so are prices along Fifth avenue, but for all that every store seems to do a prosperous business. One store has nought to offer but lingerie and laces; another specializes in perfumes, and no odor that commerce affords is wanting; still another sells only mourning goods, and yet another toys. Here is a corset shop where only French is spoken, for only the élite are welcome; there a Parisian jewelry store, and a little further on one that handles only leather goods.

Nor must one forget the little specialty places that tuck themselves away on all the blocks touching Fifth avenue on the cross streets, where one may shop at leisure, or the dainty places the initiated find in all sorts of unexpected quarters, even in big office buildings. Some enterprising girl, who has saved a few thousand dollars, unable to pay the big prices



NEW YORK'S FINAL TRIBUTE TO ITS DISTINGUISHED DEAD
The funeral of Major John Purroy Mitchel, former mayor of the metropolis, who lost his life in an airplane accident at Gerstner Field, Lake Charles, Louisiana. The cortege is passing the Public Library, Forty-second street and Fifth avenue.

Photograph by Edwin Levick



Photograph by Paul Thompson

NEWLY ARRIVED IMMIGRANTS AWAITING OFFICIAL APPROVAL: ELLIS ISLAND

If every American whose father and mother were born in the United States were to leave New York City, it would still be the second largest city of the earth, almost as large as Paris and Berlin together.

for "a place with a front," rents a room in an office building, fills it with all sorts of dainty and tasteful merchandise, and makes her little bid for business. The wise shoppers, who must count the cost, seek her tiny emporium and soon she has a comfortable trade.

THE SHOCK OF NEW YORK'S COMMERCIAL LIFE

The greatest shock Fifth avenue ever had was when Woolworth decided to put a ten-cent store in Fifth avenue near Forty-second, right in the heart of the aristocrats of shopdom. "Oh, no, it will never do," said those who take pride in the avenue's exclusive status. "Because the people who visit Fifth avenue to buy would never think of going into a ten-cent store." Mr. Woolworth was a better analyst of human nature, however, and spent many thousands of dollars in mahogany and walnut, outfitting his store as if he were going to carry the most expensive stock in the city. The result

has been all he predicted. Women who do their shopping in imported cars and have chauffeurs and footmen seem to love bargains as well as their sisters, whose only conveyance is a street car and who must wash their own breakfast dishes before joining the buying throng. This store has enjoyed success from its opening hour.

From whatever angle it is viewed, whatever facet throws back the light of its activities to the beholder, New York challenges one's interest and stirs one's imagination. Of all cities, it is the international city. In size, in wealth, in financial operations, in manufacturing, in international trade, in racial makeup, in a hundred ways it is the twentieth century Rome to which all roads lead—a city that does not belong to the New Yorker any more than Washington belongs to the Washingtonian. All nations have contributed to its population, and all America contributes to its financial, industrial, and commercial greatness.



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OVERLOOKING THE CITY OF URFA, AT THE HEAD OF THE PLAINS OF MESOPOTAMIA

The experiences of this city of 45,000 people, the Edessa of the Greeks and the seat of a dynasty of its own before the Christian era, are typical of Turkish misrule. It was in the Armenian Gregorian Cathedral, the largest building in the city, that the Moslems and Kurds, in 1896, massacred more than 1,000 Armenians. The victims were suffocated with smoke from burning carpets and mats soaked in petroleum. The so-called Mosque of Abraham in Urfa marks the traditional birthplace of the Hebrew patriarch.

UNDER THE HEEL OF THE TURK

A Land with a Glorious Past, a Present of Abused Opportunities and a Future of Golden Possibilities

BY WILLIAM H. HALL

FROM whatever angle one views the Empire of Turkey, he beholds a land of unusual fascination. To the historian, the archeologist, or the geographer it is a storehouse of wealth, worth a lifetime of exploration and study. To the romancer it gives again its thousand and one tales of the Arabian Nights.

Mythology and legend not only come from its past, but are found today on the lips and in the lives of its common people. Poetry and proverb are in the daily speech, while monasteries and mosques proclaim from every mountain top and market-place that religion is a part of the very life of the land.

If one could only turn aside from the horrors of the present, with its black current of misrule, its injustice, its deportations, massacres, and famines, and out of a wonderful past could construct a vision of a more glorious future! For, in spite of four centuries and more of retrogression under the rule of the Turk, there is promise of a golden age for the generation about to come.

THINGS FROM THE PAST

The land of Turkey looks out on the present from a historic past that is the study of all ages. The epics of Homer are concerned with events on the plains of Troy, at the mouth of the Dardanelles. Along the shores of Asia Minor sailed Perseus, and the Argonauts sought the Golden Fleece on the southern coast of the Black Sea.

Croesus obtained his fabulous wealth by sifting the river sands that brought down grains of gold from the mountains back of Smyrna. Alexander the Great defeated the Persians in northern Syria, and Babylon, on the Euphrates, was the capital that proved his undoing.

Chaldea and Babylonia, richest and most powerful nations of antiquity, were the lower Mesopotamia of today. Their wealth did not consist primarily in tributes levied on subject nations and in plundered temples, but in the riches of the soil of the Tigris and Euphrates Valley. The land of the Nile has always been famed for its marvelous productivity, but its soil is no more fertile and its fields only one-fourth as extensive as those of Mesopotamia.

Wonderful systems of irrigation once watered the plains and made Babylon and its territories the granary and the garden of all the eastern world. When the distinguished engineer, Sir William Wilcox, was called upon to survey this region for present irrigation development, his final report contemplated little more than a rehabilitation of the ancient systems of the Babylonian days.

The power of the city of Antioch reached north and south and east. It was, perhaps, the most beautiful city of Hellenic times and certainly the most luxurious. After the Scipios broke its power in Asia Minor and Rome ruled the world, Antioch became the vice-regent for Rome, ruling over all the eastern world. It was known as "The Gate of the East," through which flowed the Roman conquering legions and from which eastern luxury undermined the foundations of western power. "The waters of the Orontes contaminated the Tiber," as one ancient sage observed.

THE INFLUENCE OF CONSTANTINOPLE ON WORLD EVENTS

On the banks of the Bosphorus Constantine founded his world capital, and from that day to this the Byzantine and Turkish city has figured in all great world



Photograph by Frederick Moore

EXILED

Turkish political and other prisoners being shipped to a penal colony. "The one change that must precede all others before the possibilities of this land and these people can be realized is to rid the country of its present rulers."

movements. It has been the center of intrigues and treaties, of councils and conspiracies, around which have circled the policies of Europe for the last sixteen hundred years.

Within the bounds of Turkey also lay Phoenicia, the synonym for commerce and trade. From the shores of Syria the merchants of Tyre and Sidon sent their fleets of ships, trafficking with all the world. Located in the pathway between Egypt and Babylon, it was the ideal position for trade; while the western world, along the Mediterranean shores, was an ever-growing market for the wares of the east. With the instinct of merchants, the people of Syria made the most of their wonderful geographic position to become the first great shop-keeping nation.

And this land still remains the connecting link between the three continents, and across it should still lie the highways

of trade between the east and the west, the north and the south.

Where Turkey joins to Egypt is Palestine. No spot of earth in all the world bears such memories for so many and such a variety of peoples as the rugged mountain slopes, narrow valleys, and half desert wastes of Judea and Galilee. Beersheba, Hebron, Bethlehem, Nazareth, Jerusalem—the mere mention of these names tells the story of Abraham and Moses and David, of the prophets of Israel and of the Son of Man.

THE PRICE OF NEGLECT AND INJUSTICE

Kings and priests and people come from the north and the south, from the east and the west, and "bring the glory of the nations" to do homage to the memories that cluster about these sacred shrines.

What a land, then, is that comprised



Photograph by H. G. Dwight

HAULING FREIGHT FROM THE CUSTOM-HOUSE: CONSTANTINOPLE, TURKEY

within the limits of the Turkish Empire! Out of its past speaks military power and material wealth, literature and art, philosophy and religion. And that land which today lies desolate, with its marvelous natural resources neglected, and its people, who were the glory of the past, repressed by injustice, cruelty, and tyranny—that land possesses today the same elements for material and spiritual greatness that made it the first to develop a modern civilization.

The same broad plains that once fed and clothed a population of 40,000,000 human beings are waiting today for the plow, the seed, and the reaper. The mountains still hold riches of coal and iron and copper. The quarries still have abundance of choice marbles. The rivers are potent with power to turn the wheels of industry. The natural harbors invite the fleets of merchantmen and the river valleys and mountain passes offer natural lines of communication and transportation, as in the days when great

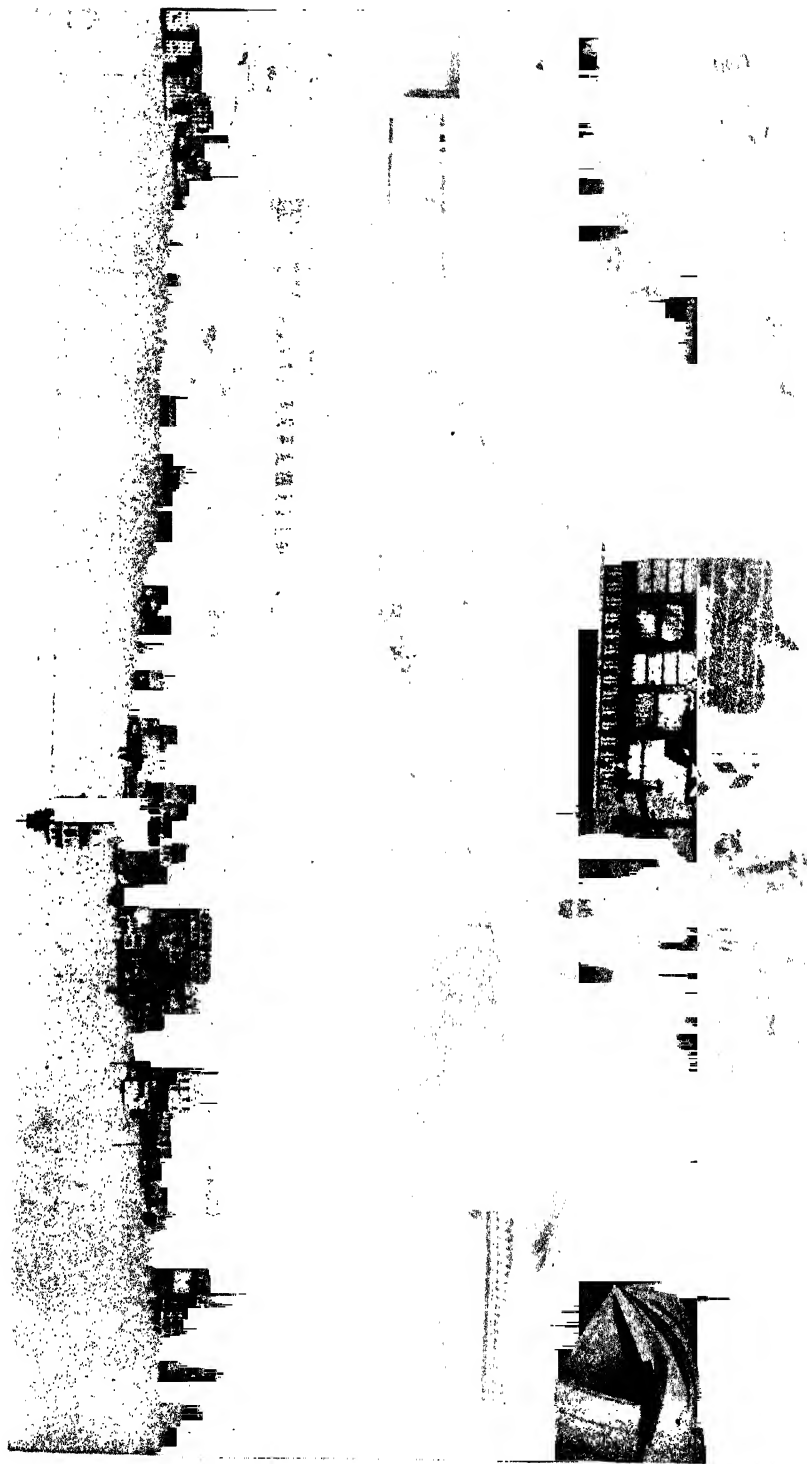
caravans passed along these natural highways, bringing the merchandise of the east to the markets of the west.

The whole land has been lying fallow for centuries—a land that modern exploration reveals as one of the richest in natural resources and as unsurpassed by its geographic location for being the trade center of the world.

THE LAND AND ITS PEOPLE

Exclusive of Arabia, which has never been more than nominally under the Ottoman dominion, the Turkish Empire, as at present constituted, embraces about 540,000 square miles of territory. Only about 10,000 square miles of this are in Europe. The Turkish Empire is equivalent to the combined areas of the British Isles, France, and Germany. It is larger than all of the area east of the Mississippi and north of the Ohio and Potomac rivers.

The territory included in our Southern Confederacy is hardly equal to the



CONSTANTINOPLE: ONE OF THE TWO GONTOON BRIDGES ACROSS THE GOLDEN HORN, CONNECTING THE OLD SUBURB OF GALATA WITH STAMBOUL

Founded by the Dorians in 660 B. C. as the colony of Byzantium, Emperor Constantine the Great chose the city as the capital of the new Roman Empire, on the threshold of the East, in 328 A. D. It stood as the easternmost outpost of Christendom for eight centuries until it fell before the Moslem sword of Mohammed the Conqueror in 1453, since which time it has been the Turkish capital. The conspicuous building in the middle background is the Galata Tower.



A PUBLIC WELL IN CONSTANTINOPLE

The Near East has adopted the American oil-can as a water receptacle in place of the picturesque jar of pottery, once universally used



Photograph by George M. Kyprie

AMASIA, ONCE THE CAPITAL OF THE PONTINE KINGDOM

The fortress has been used until recently by the Turks, but is now abandoned. Through the city flows the River Yeshil-Irmak, or Iris, which is frequently mentioned by the Greek geographer; Strabo, who was born here. Amasia rose to fame in the time of Alexander the Great. The river is spanned by seven bridges, four of which are from the Roman period, the remainder being modern.



Photograph from Janet M. Cummings

AN AMERICAN WARSHIP IN THE HARBOR AND STRUCTURAL STEEL ON THE DOCKS AT BEIRUT, SYRIA

Beautifully situated on the south side of St. George's Bay, Beirut is the chief commercial city in Syria, and, since the construction of water works in 1875, has been considered the healthiest town on the Syrian coast. It was early the scene of fanatical demonstrations in the world war, Moslem priests urging the killing of "infidels" on the first appearance of hostile fleets. At the beginning of December, 1914, the Turks demanded \$20,000 from the American College at Beirut. There were 23 Mohammedan mosques and 23 Mohammedan boys' schools in Beirut, compared with 38 Christian churches and 67 Christian schools at the outbreak of the war.



HAREMS OF CONSTANTINOPLE

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Not many Americans have seen the quaint, narrow streets of the residence section of the Turkish capital. The photograph presents an every-day scene. The street leads from St. Sophia's Mosque to the Bosphorus, and each house shown has its harem. At the bay windows on the fronts of the houses the odalisques stand and gaze into the street at passers-by. The lattices effectually prevent any person on the outside from seeing the inmates. The ever-present American oil-cans in the Near and Far East are to be seen in the right foreground. It is also interesting to note that a touch of appetite makes Turkish youth and Southern darky kin—observe the gusto with which these Mohammedan boys are attacking slices of melon.

present Ottoman Empire, not including Arabia.

The boundaries are the Black Sea and Caucasus on the north, Egypt on the south, the Ægean and Mediterranean seas on the west, and the Syrian Desert and Persia on the east. Turkey in Europe is almost a negligible area, as the Balkan war stripped the Turks of all their European possessions except Constantinople and a narrow territory along the Bosphorus and Dardanelles, some 40 miles in width; so that when the Turkish Empire is now referred to Asiatic Turkey is all that the term embraces except the city of Constantinople and a small amount of adjacent territory.

Roughly speaking, Turkey is divided into five great provinces, or districts—Anatolia, Armenia, Kurdistan, Mesopotamia, and Syria.

Anatolia (the name is from a Turkish word meaning "the dawn") lies between the Black and Mediterranean seas. This district is the home of the greater part of the Turkish population, perhaps 7,000,000 in all. Here is a case where the people can be distinguished from the government. Even the so-called subject races have suffered but little more at the hands of the governing officials than the common Turkish people.

ALL GOVERNMENT IN THE HANDS OF 300 MEN

When one remembers that all government of the Empire lies solely in the hands of a group of not more than 300 men, and that they impose their selfish will on Turk and Christian alike, one readily understands how a distinction can be made between people and government. In spite of a constitution having been proclaimed and a parliament summoned, the people, whether of Turkish or other race, have absolutely no voice in the affairs of the nation.

Armenia, east of Anatolia, extending to the region of the Caucasus and the Persian border, is the site of the ancient Kingdom of Armenia. The population is not wholly Armenian—in fact, even before the war the majority of the people were Turks and Kurds—but here the bulk of the Armenian race was found.

It is a rugged land, a succession of

mountains and valleys, where the people have had to contend with nature for the establishment and maintenance of their homes; but, like all highland countries, it has been the means of producing a religious, freedom-loving people.

They were the first nation to embrace Christianity when, in the latter half of the third century, their king, Tiradates, accepted the new faith, and most of the nation followed him. Throughout all the succeeding centuries they have remained steadfast against wave after wave of persecution, until this last storm of hate and fanaticism has swept the greater part from their homes and has destroyed at least a million—two-thirds of the entire people.

THE LAND OF SALADIN, THE KURD

Kurdistan, a hill country north of the Tigris River, is the home of a brave, virile, largely illiterate series of tribes and clans known as the Kurds. They are the descendants of the Cardushi, who gave Xenophon and his ten thousand so much difficulty on their march across these same hills on their way to the sea.

Nominally they are Moslem in religion, but they have retained many elements of heathen worship. Some of their tribes are "Yesdi," or devil worshippers. They are home-loving, frugal, and capable of enduring great hardships. They practice strict monogamy and their women occupy an equal place with their men in the family life.

The Kurds have furnished at least one great man to history, for Saladin, the chivalrous leader of the Saracen hosts, the compeer of Richard Cœur de Lion, was from this people.

Mesopotamia, Upper and Lower, vies with Egypt in claiming the honor of being the home of ancient civilization. It comprises the valleys of the Tigris and Euphrates rivers. Here flourished the Chaldean, Babylonian, and Assyrian empires. The city of Bagdad, with all its glamour of mystery and magic, is in the heart of Mesopotamia.

ONCE THE RICHEST LAND IN THE WORLD

This was the richest land in the world, the granary of the ancients; yet, in spite of all that it has been, it today lies largely



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THE WALLS OF NINEVEH: MESOPOTAMIA, TURKEY IN ASIA

Out of the past of this land, now ruled by the Turk, speaks a glory of military power, material wealth, literature and art, philosophy and religion. Centuries before the Christian era, a regularly appointed librarian had charge of the library of Nineveh's King Ashurbanipal. That institution was open to the public, for Ashurbanipal himself recorded: "I wrote upon the tablets; I placed them in my palace for the instruction of my people."

waste, the desert sands have encroached upon the fertile fields, while the clogged canals have turned other portions into swamps and marshes.

What population there is—not more than one million—is of Arab origin and the Arabic language is spoken throughout. There is, in fact, a very distinct dividing line between the Arabic and the

Turkish-speaking portions of the Ottoman Empire. This boundary corresponds with the line of the Bagdad Railway from the Mediterranean to the Persian Gulf. It is for the exploitation of this rich land of Mesopotamia that the famous Bagdad line was built.

Syria, the region extending from the Taurus Mountains to Egypt and from the

desert to "the Great Sea," needs no identification. It is the land of the patriarchs and prophets and apostles—"the Holy Land." Its population numbers about three and a half millions, of Semitic origin, speaking the Arabic language, and yet with so many races intermingled through the centuries of the various conquests and occupations that the people cannot claim any one race as their own. Greek, Roman, and European Crusader have all blended with the ancient Semitic stock to produce the Syrians of today, whom Lord Cromer, in his *Memoirs*, termed "the cream of the East."

In Syria was the one green spot of Turkey—the Lebanon Mountains. In 1860, because of massacres, the European Powers insisted that these mountains be made autonomous. And since that date this little district has been a living demonstration of what good government will produce and of what the people of the land are capable of becoming.

The steep mountain sides have been terraced to a height of 4,000 feet and planted to olives, figs, and vines. Taxes have been low, safety to person and property secured, good roads built and kept in repair. The people have constructed more comfortable homes and have sent their sons to schools and college.

The story of the achievements of the Lebanon and its sons during these sixty years of autonomy would be a thrilling narrative in itself. Now that autonomy has been taken away, the Lebanon is prostrate in famine.

NATURAL FEATURES

Practically the whole Turkish Empire is of the same surface configuration—high mountain ranges along the sea-coast, with elevated plain and plateau in the interior. These inner plains are generally fertile, being constantly renewed by soil washed from the surrounding mountains. Where rain is sufficient, or where water can be obtained for irrigation, they produce fine crops of grain.

In ancient times the mountains were everywhere covered with forests. The cedars of Lebanon not only furnished timber for the building of Solomon's Temple in Jerusalem, but the kings of Egypt annually floated large rafts of logs

from the Syrian coast to supply the demands of the cities of the Nile. This constant demand from foreign lands, together with the lack of any system of reforestation, has practically denuded the mountains of the whole land.

Once more to cover the mountains and hills with pine and cedar and oak would be a simple task if carried on systematically. The chief enemy today of reforestation by nature is the herds of goats, which every spring roam over the whole country and devour every green thing. The little seedling trees suffer especially.

POPULATION OF THE OTTOMAN EMPIRE

The population of the Ottoman Empire, not including Arabia, is about 18,000,000, or was before the war. In giving statistics on any subject regarding Turkey one speaks in approximate terms, for only estimates can be given, as no thorough census is taken or other statistics systematically gathered. Among the various races this total was distributed as follows: Turks, 7,000,000; Syrians and Arabs, 4,500,000; Kurds, 2,000,000; Armenians, 2,000,000; Greeks, 1,500,000; Jews, 500,000; other races, 500,000.

All of these peoples can trace their history back to the period when fable and legend blend with the beginnings of historic facts. And all, except the Turks, have inhabited, from time immemorial, the districts in which they are now found.

These races represent the three great monotheistic religions, which have also originated within the boundaries of the Turkish Empire. About two-thirds of the entire population are Mohammedan, but of different sects. The Christians, also, are divided into many sects, representing nearly all the great divisions of the church.

The Christian races are the most progressive part of the population; they have been most responsive to education and have made some progress in establishing schools of their own. The Turks are the most backward of all; yet under proper encouragement and facilities they are capable of good progress. In competition with Greeks, Armenians, and Syrians, however, they invariably fall behind.

It should be noted that of 48 Grand Viziers who have risen to prominence



Photograph by Mortimer J. Fox

MENDING "AL FRESCO": CONSTANTINOPLE, TURKEY

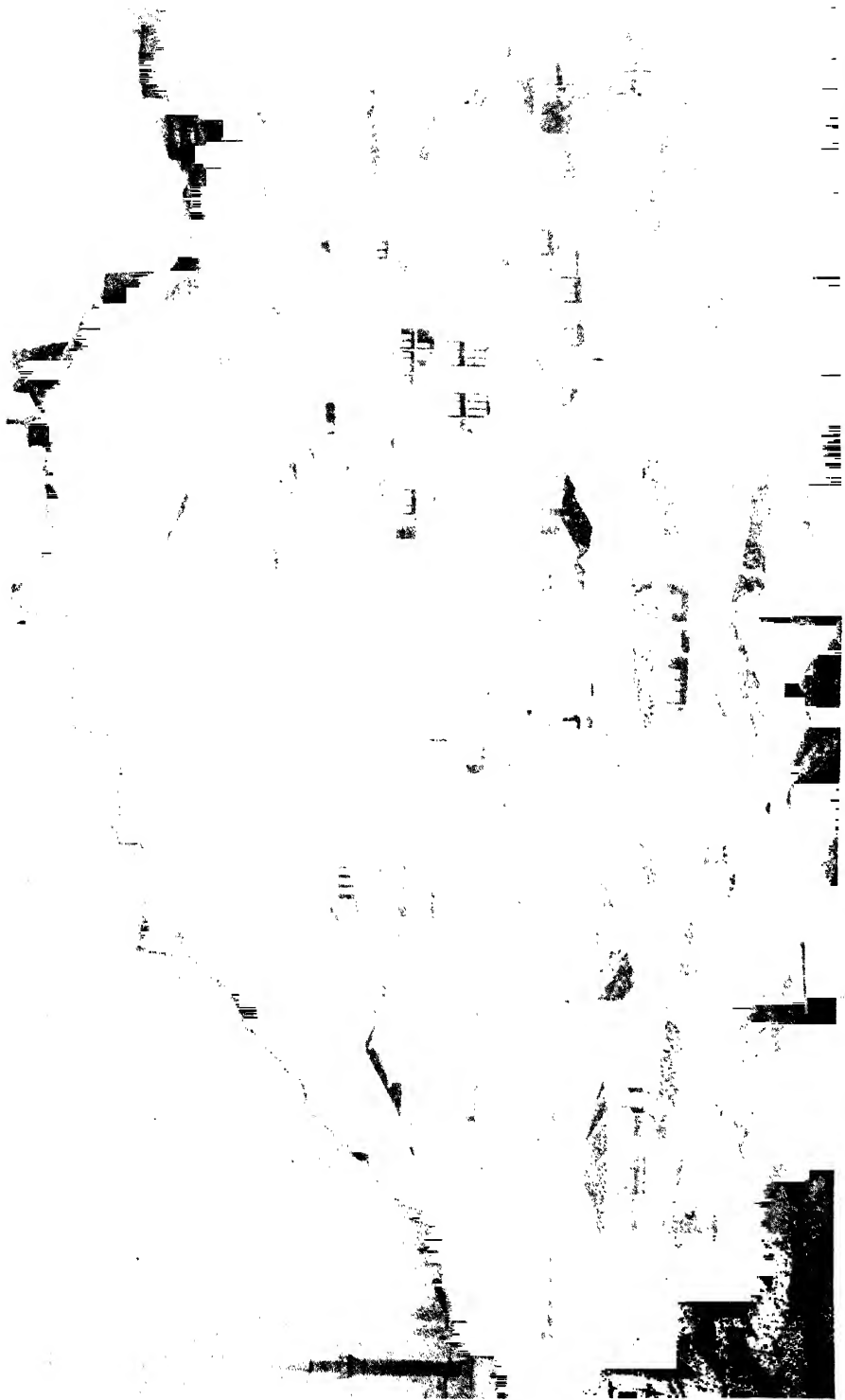
"Turkey has never been a manufacturing country, but has shipped abroad her raw materials—silk and wool and hides—and has received them back in cloth and shoes. With the water-power of its mountain valleys harnessed, future generations would see their land transformed. But the greatest resource of this country arises from its geographic position. Three arms stretch out in three directions—one to 'the continent of the past,' one to 'the continent of the present,' and a third to 'the continent of the future.'"



Photograph by D. Carruthers

AN ARAB OF THE BENI SAKHR TRIBE

Baron de Larrey, who was Napoleon's surgeon general on the latter's Egyptian and Syrian expedition, has paid this tribute to the Arabs: "Their physical structure is in all respects more perfect than that of Europeans; their organs of sense exquisitely acute, their size above the average of men in general, their figure robust and elegant, their color brown; their intelligence proportionate to their physical perfection and without doubt superior, other things being equal, to that of other nations." This people has recently revolted against Turkish oppression



THE ARMENIAN CITY OF HEREKE, EAST OF AMASIA

Armenia is a succession of mountains and valleys where the people have had to contend with nature in the establishment and the maintenance of their homes. It was the first nation to embrace Christianity.

Photograph by George M. Kyprie



Photograph by Helen E. Jacoby

NATIVE STREET TYPES IN SMYRNA

With the exception of Damascus, Smyrna is the largest city in Turkish Asia. This, the chief seaport of Anatolia, has a population of more than 200,000, of which fully one-half are Greeks, 60,000 are Turks, 20,000 Jews, 12,000 Armenians, and 15,000 Europeans and Levantines. In November, 1914, diplomatic relations between the United States and Turkey were strained for a time, when a Smyrna shore battery fired on a launch from the U. S. S. *Tennessee*, which had been dispatched to European waters to assist American tourists in returning home. Turkey's explanation was that the shots were fired not with hostile intent, but to warn the launch that the harbor was mined.

within the past four centuries, those whose names would be in history's "Who's Who," only 12 have been Turks; all the others were either of Greek or Armenian origin.

Taking the country as a whole, the per-

centage of illiteracy is between 80 and 90. The government educational program is very comprehensive, but exists largely on paper. The Turk is able to dream great dreams, but amazingly unable to bring those visions to reality.

THE VARIED RESOURCES

All of the varied resources that contributed to make the nations of antiquity materially great are still available for the future enrichment of the people dwelling in those same lands.

Herodotus, writing of Lower Mesopotamia in the noontide of its prosperity, declared: "It is far the best corn land of all the countries I know. It is so superb that the average yield is two hundred fold, and three hundred fold in the best years. But I will not state the dimensions (of the plants) I have ascertained, because I know that for any one who has not visited Babylonia and witnessed these facts about the crops for himself they would be altogether beyond belief."

In the days of the early Caliphate an inventory showed some 12,500,000 acres of land under cultivation; and Sir William Wilcox in his report, "The Irrigation of Mesopotamia," published in 1911, states that the Tigris-Euphrates delta is an arid region of some 12,500,000 acres, but capable of easy leveling and reclamation. The Arabic name for this region is *Sacâd*, which means the black land.

And northern Mesopotamia is equally rich in possibilities. In ancient days this was a district "so populous and full of riches that Rome and the rulers of Iran fought seven centuries for its possession, till the Arabs conquered it from both," writes A. J. Toynbee.

The same author points out that "in the ninth century A. D. northern Mesopotamia paid Harun-al-Rashid as great a revenue as Egypt, and its cotton commanded the market of the world." It is well known that our word muslin is derived from the name of the city Mosul, in Upper Mesopotamia.

SPLENDID POSSIBILITIES; NEGLECTED RESOURCES

And why should this land not be producing as well as ten centuries ago? The soil and the climate have not changed. The rainfall and the water for irrigation are just as abundant as in the days of old. The people are the same that lived then in the land, equally industrious and thrifty. Why have the past four centuries laid a blight over the fairest corn land of the east?

But it is not Mesopotamia alone that offers agricultural returns in the Empire of Turkey. There are the fertile sea-coast plains of ancient Philistia, the uplands of Moab and Ammon, the wheat fields of the Hauran south of Damascus, and the great valley between the Lebanon and Anti-Lebanon, in Syria; the whole elevated plateau of central Asia Minor, with Konia (ancient Iconium) as its center. There are the fertile river valleys and hillsides of Armenia and Kurdistan, together with the famous Cilician plain and the regions about Smyrna and Broussa.

Not only grain of every kind rewards the industry of the peasant, but also fruits of every variety, semi-tropical and temperate, are easily produced. Who has not eaten of the figs of Smyrna and the dates of Bosrah or heard of the grapes of Eschol?

PRIMITIVE METHODS OF AGRICULTURE

The first interest of the Turkish Empire is agricultural. From north to south and from east to west it offers splendid opportunities to the farmer. And these lands in great part lie uncultivated. Reservoirs for the storage of water and other irrigation works that might change desert acres to producing fields are not constructed.

The most primitive modes of cultivation are still in use—the ox-drawn plow of Bible days, the cutting of great fields of grain with the sickle, the threshing-floor, where wheat is trodden out by the hoofs of animals; the slow and painful hand labor, with clumsy instruments, that yields but a minimum of return for the effort expended.

It is all a tale of splendid possibilities, but of neglected and undeveloped resources. Yet it is a promise to the future generation of boundless productivity and of untold wealth in store for progressive industry and a benevolent government.

The marvelous resources of this Empire are not comprised in its agricultural possibilities alone. The story of Croesus gathering gold from the river sands is not an idle tale. Just this year an American missionary writes: "Grains of gold are frequently found in the gravel left after the torrential floods."



Photograph from Charles K. Moser

SOLDIERS OF THE DESERT

These Arabs are devout Mohammedans, but their country is only nominally under Turkish suzerainty. Not long ago the world awoke one morning to hear that a new nation had been established—the Kingdom of Hejaz. The Grand Sherif of Mecca had revolted against Turkish rule, and with the help of men like these had thrown off the Ottoman yoke.

Of course, no complete and thorough survey has ever been made of the mineral wealth of Turkey. But German maps (and who has studied Asia Minor more thoroughly than the Germans?) mark deposits of coal, copper, iron, silver, gold, and lead, with many of the lesser minerals, such as chrome, emery, manganese, mercury, rock-salt, and sulphur. These are not noted on the map in scarce and isolated localities, but the various deposits occur with such frequency as easily to explain the German zeal for cultivating friendship with Turkey.

The American missionaries resident in the country give unanimous testimony to the mineral deposits. An American professor in one of the colleges writes: "The copper deposits at Arghuni Maaden are wonderfully rich and extensive. The mine now being worked contains 70 per cent of copper, of which about one-half is recovered by the crude method of

smelting in use. Ore containing 30 to 50 per cent is thrown away as useless and mountains of such waste surround the mine."

An American doctor states that "the mineral resources of Konia are certainly very great. There are silver mines, lead, and some gold; there are mercury mines a few hours from Konia, while chrome, cinnabar, lead, emery, manganese, and rock-salt are found in the province."

THE MOUNTAINS STILL FULL OF VALUABLE ORE

The president of one of the American colleges in Asia Minor reports: "In this region there are known to be deposits of silver, coal, and copper. I once asked an old Greek up among the mountains about his mining experiences, as we were picking our way together among the slag of some abandoned silver mines. He told me he had spent years under ground. I

asked him whether the mines had closed because the mineral was worked out. 'Whew,' he replied, with an expressive gesture, 'the mountains are full of it.' He did not speak with scientific information, but he had had the experience of a practical miner."

These are a few of the statements made by trained Americans who have spent their lives in the regions of which they write. And all that they tell and more is abundantly substantiated by the reports of the German engineers who have been making extensive surveys for their government.

The question arises, How has it been possible for these riches to have remained undeveloped at the very door of Europe? It does seem impossible, but the true answer is given in this sentence from one of the missionary reports: "There are hopeful indications of various other minerals at other places also; *but the Turks have always discouraged attempts at developments.*"

PETROLEUM DEPOSITS

It is well known that the extensive petroleum deposits along the Persian frontier were a principal cause of England's desire to participate in Persian politics not many years ago, and the possession of these oil fields has been one of the chief objects of military contention between the Turkish and British in their Mesopotamian campaigns.

There are other rich prospects for oil in widely separated parts of the Empire. After careful examination one expert reports: "German engineers have made very thorough surface examinations of this district and had great anticipation for developing large oil fields throughout Mesopotamia. There have been found favorable indications for the development of petroleum areas in several parts of Asia Minor, especially in Syria and Mesopotamia. The indications in Syria are perhaps as promising of rich oil deposits as any in the world."

But here again one comes against that stone wall that has blocked all progress of development, for the report quoted above concludes: "The complete determination of the petroleum supply of Asia Minor must await the return of a stable

government, upon whose permanency and good faith capital can rely and which will be capable of establishing law and order throughout the territory in question."

WATER POWER

The Abana, one of the rivers of Damascus, in beautiful cascades, falls from the Anti-Lebanon Mountains to the plain below. A few years ago these waters were gathered into conduits up among the highlands and passed over water-wheels. Now they are not only irrigating the groves of apricots which surround the city, but, doing double duty, are also lighting the great mosque and the city streets and moving electric cars through the oldest city in the world.

What has been done with this mountain stream can be repeated over and over again throughout the land. Turkey possesses an unmeasured power that could be developed from the rivers that rush from the highlands to the sea. Often these streams are great rivers—the Tigris, Euphrates, or Kizil Irmak—flowing through narrow gorges, surging along with mighty force, fed by the eternal snows of Ararat, Taurus, or Lebanon.

Turkey has never been a manufacturing country, but has shipped abroad her raw materials—silk and wool and hides—and has received them back in cloth and shoes. With this water-power harnessed in its mountain valleys the future generation might see their land not only a source of agricultural and mineral products, but also a transformer of these into forms all ready for the markets of the world.

COMMERCIAL ADVANTAGES

But perhaps the greatest resource, after all, of this country arises from its geographic position. Three arms stretch out in three directions—one to "the continent of the past," one to "the continent of the present," and a third to "the continent of the future."

Can there be found anywhere else in the world a position so naturally suited for commanding the world's trade? And in the development of the people who have been nurtured in this land this characteristic of trading ability has been bred.

The Phœnicians sailed to the farthest

seas and made Sidon and Tyre the world centers for commerce. The Greeks, putting out from their islands near by the Asia Minor shore and from Ephesus and other cities of the mainland, were the great carriers and traders of ancient times. We read that King Solomon, taking advantage of his location between Egypt and Assyria, carried on a great business of mercantile exchange between these empires and became a merchant prince, whose renown spread to the corners of the earth. Following in the footsteps of their ancestors, the people of those lands, the Syrians and Greeks and Armenians, have established a reputation as traders the world over.

The great trunk lines of commerce between the north and the south and the east and the west should pass across this country. In years gone by all the nations of Europe maintained commercial representatives and warehouses in the city of Aleppo. This center was the mart of exchange between Europe and the eastern lands. That position could easily be recovered and surpassed, for the city lies at the natural point of meeting of the great world trade routes.

SPLENDID NATURAL HARBORS

There are natural harbors which with little engineering could become suitable terminals for the land routes. In constructing the Bagdad Railway Germany had obtained a concession to construct a harbor and stores at the city of Alexandria, near to the place where Alexander defeated Darius, King of Persia. Germany was also to have the privilege of policing this port with her own subjects.

The importance of Beirut, Tripoli, and Smyrna as ports has already been recognized and they are destined to increase. Constantinople is perhaps the finest harbor in the world, and at this point must pass most of the trade between Europe and Asia.

Asia Minor has been and still should be not the bankrupt nation, but the banker nation of three continents.

With each of the topics here presented there has always been an "if" or an "ought to be" or "might become." Turning the pages of history, one reads what this country has been. Reading the daily

papers, one knows what the country is. Letting imagination dwell upon the resources provided by nature and the capabilities of the people, one can form a vision of the country's future if only one great change can be brought about.

In 1453 Mohammed the Conqueror surrounded the city of Constantinople and finally caused the downfall of that city, which had stood for eight centuries as the eastern outpost of Christendom. In 1517 the city of Jerusalem and the land of Egypt also fell.

The succeeding 400 years have witnessed the gradual degradation of the land. The cotton and corn fields of Mesopotamia are now deserts and swamps. The mines once worked have been abandoned. The cities, once busy with the trade of the world, are today but bazaars for petty bargains and deceit. The people, with the history of a great past and with capacities second to none, are by injustice and persecution driven from their homes to foreign lands or subjected to a determined plan of extermination by deportation, massacre, and famine.

The one change that must precede all others, therefore, in order to take the first steps toward realizing the possibilities of which this land and these people are capable is to rid the country of its present rulers. It is not merely to "drive the Turk out of Europe," for that has practically been done already, but to deprive him of every vestige of authority. Not only have the Christian races suffered at his hand, but the common Turkish people themselves have suffered almost equal wrongs. Before all bars of judgment, because of his incapacity, his inefficiency, and his atrocities, he has forfeited every right to rule.

THE PARABLE OF THE UNPROFITABLE SERVANT

The parable tells of the servant who, having failed to develop the one talent entrusted to him, had this judgment passed upon him: "From him that hath not shall be taken away even that which he hath. And cast ye the unprofitable servant into outer darkness." And there is no longer one judgment for individuals and another for governments.

This one change having been made and the forfeited talent having been given to a government that has proved its ability, then the dream for these long-oppressed lands can become a reality. But this change should not mean the handing of Turkey over to be divided up into "spheres of influence" to satisfy colonial ambitions, no matter how long cherished, nor the breaking up of the country into a series of petty States, thus repeating the Balkan menace; but it should mean giving this land a good reorganizing government backed by the much-hoped-for League of Nations.

With this good government the country, which has long been an unsanitary plague spot, a constant health menace to Europe, will be cleaned up; adequate schools will be provided; courts of justice will replace those of injustice; proper means of transportation will be constructed; industries will spring up and the resources of mountain and plain will contribute their share to the support of the world.

"Then shall the wilderness blossom as the rose" and "every man shall sit under his own vine and under his own fig tree and none shall make them afraid."

A DAY WITH OUR BOYS IN THE GEOGRAPHIC WARDS

BY CAROL COREY

AUTHOR OF "FROM THE TRENCHES TO VERSAILLES" AND "PLAIN TALES FROM THE TRENCHES"

The splendid work which the members of the National Geographic Society are supporting is described by the author, who reveals the brave and cheerful spirit in which American youths endure their wounds and faithfully records the language in which they express their appreciation of the provisions which have been made for their care and comfort.

THE first time I visited what used to be called the American Ambulance Hospital at Neuilly, just outside of Paris, and what is now American Military Hospital No. 1, I lost a lot of my horror of such places.

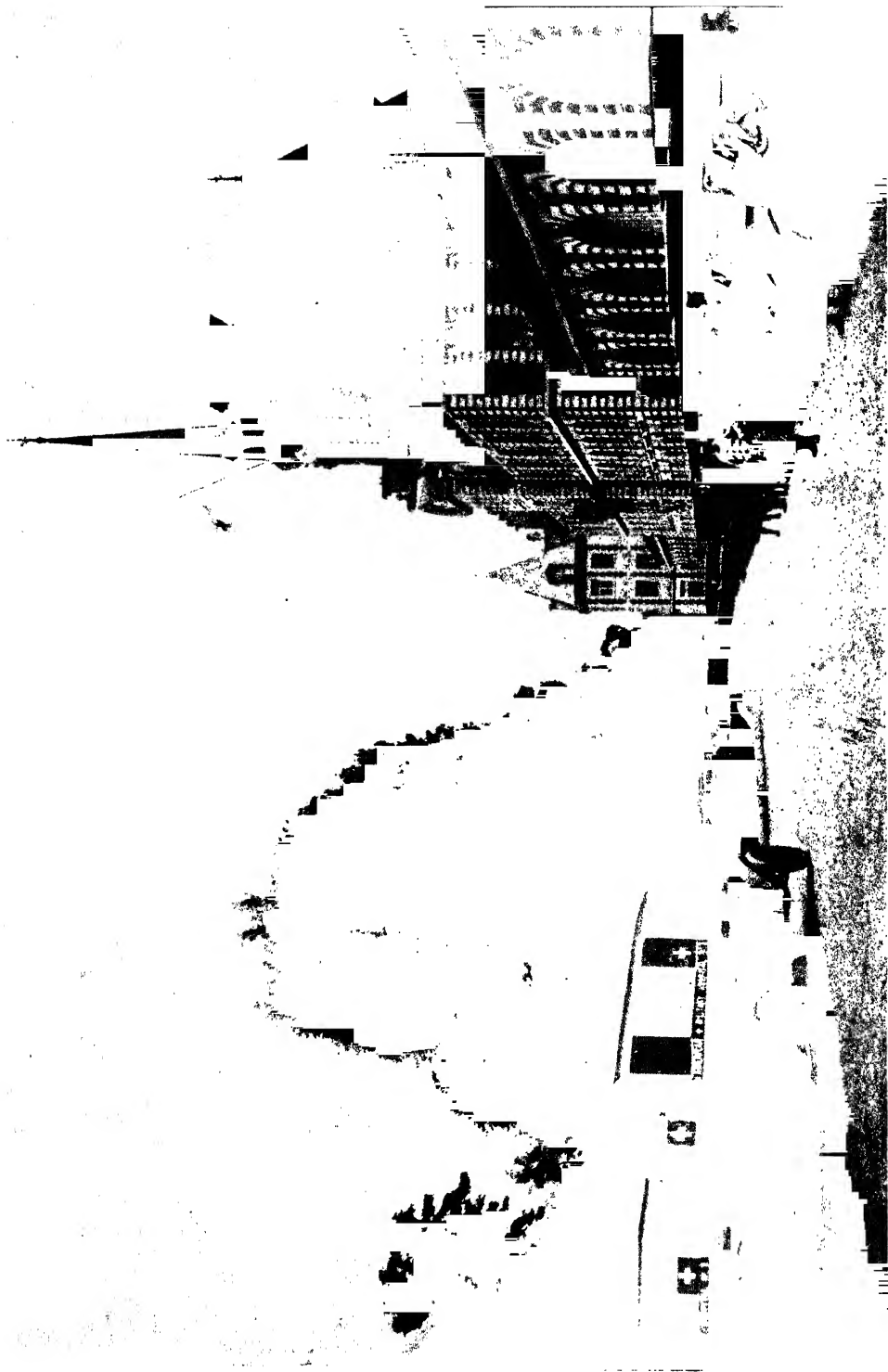
It was a glorious afternoon in early spring. On almost every street corner an old woman was selling flowers. There were marguerites and tall, graceful sprays of tiny button-roses, and a perfect wealth of lilacs. I bought a great many of the lilacs, though they were expensive, for I knew that our boys would like them better than most anything else. They're such a homey flower. The scent of lilacs recalls the yard at home and stands for the reawakening of spring and all that that means.

I told my particular old lady that the lilacs were for the American wounded, and she sniffed and said she hadn't heard there were any. The taxi driver demanded an extra franc-fifty for what he

called a supplement, though I called it a hold-up.

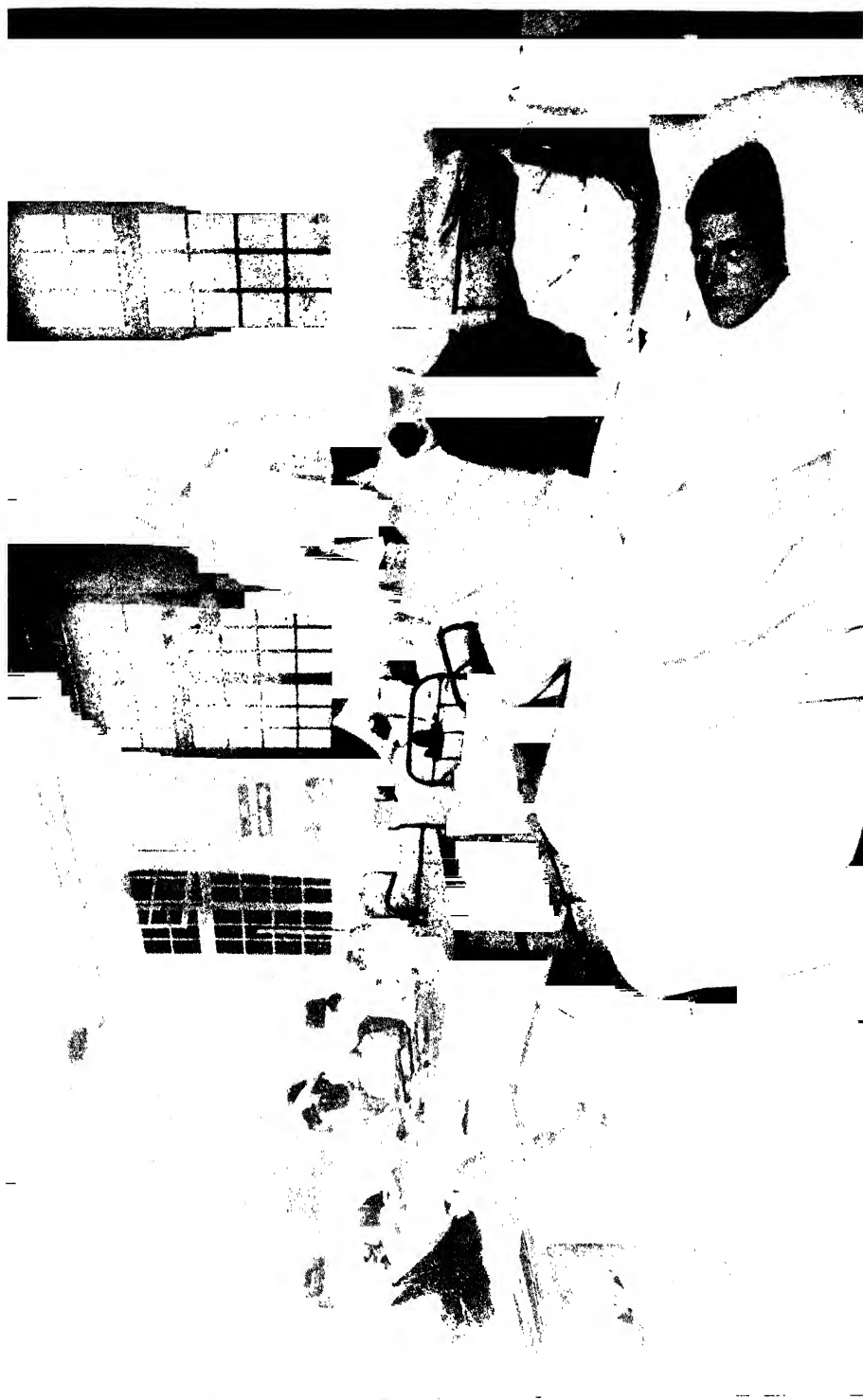
At the hospital I found less than fifty soldiers—a few slightly wounded, the rest sick only. The warm, sweet breeze was swaying the curtains, and the new leaves on the trees just outside the windows were sparkling after a heavy shower. The nurses were reading or embroidering, and I remember one fellow said it smelled "just like fishin' time." Another assured me that although the Yanks had done nothing as yet, "it wouldn't be long before Fritzie 'd know they were in it."

And it wasn't. A few weeks later I made my second trip to Neuilly. The lilacs had long since disappeared, but I was able to take an armful of sweet peas of every color. I bought out all that one stand held, and when the little apple-cheeked vender asked me why I needed so many I told her. She insisted upon taking two francs off the bill. "I am



Courtesy of the American Red Cross

THE ENTRANCE TO AMERICAN MILITARY HOSPITAL NO. 1 AND ITS FLEET OF AMBULANCES WHICH BRING THE WOUNDED FROM THE HOSPITAL TRAINS AS THEY ARRIVE FROM THE FRONT



Courtesy of the American Red Cross

ONE OF THE WARDS MAINTAINED BY THE MEMBERS OF THE NATIONAL GEOGRAPHIC SOCIETY

These photographs were taken before the supplies donated by the splendidly patriotic and sympathetic ladies of the National Geographic Society throughout the country were received overseas. The many afghans, quilts, convalescent jackets, pajamas, bath-robos, slippers, handkerchiefs, and other articles have now arrived in France and are adding to the comfort and contentment of America's wounded.



Courtesy of the American Red Cross

A SCENE IN THE CONVALESCENT COURT OF THE AMERICAN MILITARY HOSPITAL
AT NEUILLY, PARIS

With its fluttering flags, its brilliant flower-beds, and its gayly awninged shelter porches, this recreation court for America's wounded in Paris resembles the scene of a garden fête. This is the concert hour, music being furnished by a military band.

poor," said she, "but for the American soldiers, would that I could do more!"

The villainous-looking individual in the fiery red vest who drove my taxi said there OUGHT to be a supplement, but inasmuch as I was going to see the saviors of France, the least he could do was to refuse to take it.

He deposits me in front of the main entrance and I stand at the top of the steps to glance about the courtyard. A dust-covered ambulance is backing in slowly and carefully. The youthful driver jumps down and calls to some one inside the building, "Here's four more fer ye. What'll I do with 'em?"

Whoever is addressed sings back, "Can they walk?" And the answer comes, "I'll say they can't."

Behind this ambulance comes another, and behind that one comes a third, until I count nine all told. I ask the nurse beside me if she thinks I'll be in the way,

but she smiles and says, "Why, how absurd! This is only a handful."

A doctor steps up to supervise the unloading. From him I learn that never has the hospital been so crowded as now. It is supposed to care for one thousand, but three hundred extra beds have been added, and "if they keep coming we'll surely have to put them on the roof."

He points out the two great tents hastily erected on the terrace and says that the operating rooms have not been empty for three days and nights. Everybody is dead tired and consequently nervous—that is, everybody but the soldiers. They're the best dead-game sports in the world.

"But come in and see for yourself," he adds.

A CONSTANT PROCESSION OF STRETCHERS

We pick our way through interminable hallways between what seem to be miles



Courtesy of the American Red Cross

DOING HER BIG BIT FOR THE ARMY

A member of the American Home Communication Service, in one of the National Geographic Society Wards, receiving instructions from a wounded soldier about the letter home (see page 79).

of beds. On each is a suffering, bandaged boy. Sometimes it's hard to see the boy for the bandages. Occasionally, when the wound is in the spine, the poor invalid is lying face downward, strapped to a board. Even so, there is always the smile of thanks for the cigarette, the flower, or the magazine.

We pass an endless number of open doors, through which I see many more beds and many more boys. We stand close to the wall to allow a rubber-tired stretcher to be wheeled by. It stops before the operating room, and the one on it, in answer to my encouraging wave, throws me a kiss. There seems to be almost a constant procession of stretchers, for thirteen hundred wounded require countless dressings.

One husky lad in ambulance uniform walks at the head and another at the foot. All day long they lift their comrades, first from their beds to the litter, next onto the operating table, then back again into their beds. This is no easy task.

To do this work a man must be strong

and patient and very tender. And he always is all three. He will tell you that he would much prefer to be at the front, but since he has been placed here it is not for him to grumble. He will wipe the perspiration from his dripping forehead and absolutely refuse a box of smokes because he knows they're scarce and are intended for the "blesses." If the man on his stretcher is conscious he waits smilingly until the best-liked brand is selected from my supply. If the newly operated one is still in happy oblivion, he picks out what he thinks will please the sick one, promising to put it on the bedside table.

The soldier on the stretcher and the two at either end disappear around a corner, and three more come, and after them three more. It would all be most sickening if it weren't for the thought that these are the youngsters who stopped the rush on Paris, every one of whom will tell you that he wouldn't give up his experience for a million dollars.

The third floor in this hospital is much

the nicest. It is the sunniest, hence the cheeriest. The two Geographic wards are rather far down to one end, which makes them very quiet. And that, of course, is the best of all. There are twelve beds in each ward, and there is a battered and banged-up American soldier in each bed. It costs \$600 a year to keep him there—clean, beautifully cared for, and well nourished. But that sum cannot pay for the flowers on the tables, the phonograph and its records, the oranges in the afternoon, and the all-too-seldom ice-cream treat. Oranges cost ten cents apiece, and as one kid put it, "One ain't hardly worth the trouble o' peelin'." That boy was full of fever.

ANOTHER GEOGRAPHIC WARD FOR THE "TIGER CATS"

I am told that both of these wards are nearly, but not quite, financed for this year, and that there's talk of the Geographic Society opening a third. If that should come to pass, it would mean that twelve more of what the Germans already term the "tiger cats," heroes of Chateau-Thierry, or some other point quite as bloody, would eat and sleep in cleanliness and live or die blessing each member.

"Hello, American!" calls out a musical voice. "Is it true that Washin'ton's gone dry? I gotta reason foh askin', 'cause that's my home town."

"Such being the case," I say, "I wonder if you noticed the sign above this door?"

"I reckon I did," he assures me. "When they rolled me up on the stretcher I kept repeatin' those words to myself: 'Donated by the National Geographic Society of Washin'ton, D. C.,' 'cause I had a feelin' I was goin' to get a shock when they shifted me onto this bed. I kept thinkin' how all the girls in our family had helped in the donatin', and I kept sayin' ovah an' ovah, 'It's a good hunch; you're gonna get well.' An' first thing I knew I was here in bed as pretty as you please. Thanks, lady; that's my fav'rite flower. What is it?"

Through the wide-open windows the bright health-giving sun pours into Geographic Ward No. 1. Here the men are all "on the mend," so that a visitor, espe-

cially one bringing something to smoke, is mighty welcome.

FORTITUDE AND FRATERNITY

There is an air of real jollity, for the phonograph is blaring out that once popular melody, "Waiting for the Robert E. Lee," and even the boy in the wheeled chair is beating time with his one foot. When I can make myself heard I ask him if he'd like to have a flower. "Say, on the level," he chuckles, "what'd I do with it?"

I like him for that, just as I like the little pale one flat on his back on the bed in the corner. I can tell that he loves flowers from the way he handles the one I give him. He is very unhappy because some of the "guys" say he bawled all night. Well, if he did, it was because he was in such agony that half the time he didn't know he was doing it. This morning he found he'd chewed his handkerchief to rags, so they needn't say he hadn't TRIED to be quiet.

"That's all right," says a neighbor, "but if I'd a had something to flatten you out with I'd a flattened you out, you bet."

"You!" scoffs the pale one. "Maybe you don't know that I know it was YOU who got up outer bed, gave me the drink, and moved my leg three times."

THE BOY WHO DISCOVERED A SPY

"Got any chocolate?" begs one who is able to sit up in bed. He doesn't look more than seventeen, but insists that he'll be nineteen next Tuesday. He's got what he calls three "scratches," and throws back the covers to exhibit a leg bound up like a mummy. I can't help thinking that I'd hate to have "scratches" like his.

"But, gosh! it was worth it," asserts he. "If you'll stay with me a minute I'll tell you about it."

"I was a motor-cycle despatch bearer, so they let me carry a forty-five. I was pumping up a flat tire when I heard my captain talking to a man in French uniform. Now, you see, I know a lot o' German. All of a sudden this bird gets tangled up in his French and begins to fill in with a few Kaiser words.

"'Ha, Ha!' says I to myself; 'so that's the little idea.' I went straight up to him and I says, 'You're a spy, that's what

you are.' Just like that! And he never denied it, but started to beat it.

"The captain stood in the middle of the road, with his mouth wide open, as I started to run after the Dutchy. He could run some, let me tell you. When we got to the first turn there was a big military car painted just like a French one. What do you know about that? A man inside throws open the door, and then I got busy. Bing! BING! says I, and he went down like a lump o' dough.

"The fellow in the car jumped out, hauled him in, and the chauffeur started on high. The live one stood up in the back seat, and out o' three shots he made three hits. Whoopee! THIS is the life!"

HOW THE WAR "GETS" SOME

"Funny how this war 'gets you,' " soliloquizes a soldier young in years, but old in experience. "Why, when I was at home I couldn't watch my father kill a chicken. Now? Huh! Once I was racing along with some o' my pals, when we saw a mess o' squareheads hiding out in a ditch. 'All right,' says I. Take THAT fer the *Lusitania*, and THAT fer the *Tuscania*, and THAT and THAT and THAT fer them Belgium babies! And we threw every grenade we had with us."

The man from the north of Ireland, who hasn't been an American citizen very long, sighs and says, "Sure I like to lie here and think o' the sea." And the one who tells me he was born in Damascus and can speak seven languages compares his children to "bloomin' roses." The red-faced fat boy yawns, "Oh fer a dip at old Coney," and a fourth asks the nurse if it's true that only seven died last night.

"PATCH ME UP QUICK, DOC"

A shoulder, now almost well, is being dressed, and the surgeon's mouth twitches ever so little as he hears, "Patch me up quick, Doc, and get me away from here—I'm needed somewhere else."

The funny little Frenchman who answers to the name of "Blondy" has complete charge of the phonograph. He hardly waits for one record to finish before putting on another. Wondering why he should be here, I am told because he's "got the habit." He's been in the hospital so long that no one has the heart to

send him away. Anyhow, he's SUCH a help. "But you ought to see him limp when the major comes around!"

"Only one thing worries me," announces a faint voice from the nearest cot. "The top of my tin hat and the top of my nut sailed away together, and if they don't give me back that helmet I don't care what becomes of me."

"You ought to wear your soovneer 'round your neck, like I do," admonishes another. He boastfully shows us what's left of a button—really only the rim. His tunic was open when Mr. Bullet said, "Howdy!" "Pretty good work," says he. "But not good enough."

From the pocket of what he calls his "kimona" a proud owner pulls out a piece of hard tack. In its center is a big chunk of shrapnel, and my attention is called to the fact that said hard tack is still intact. "And then they expect a TOOTH to crack it," he snorts.

THE GOLD-TOOTH SOUVENIR

"I seem to be the only unlucky one here," comes from an interested listener. He has black, curly hair and is so slight that his body is hardly outlined under the blankets. "When I left old Michigan I told my girl I'd bring her a souvenir that was a souvenir. 'None o' your old Dutch helmets for me,' says she. 'I want something o-ri-gi-nal.' 'You'll get it, sis; you'll get it,' says I. So, after I'd croaked my first I started in. He had the handsomest gold tooth you ever saw. And BEELEVE ME! I worked. I pushed and I pulled and I twisted. And JUST when I thought I had it, I'll be doggoned if it didn't drop down the poor boob's neck."

"You unlucky?" demands an indignant bystander. "What do you think of me? First they made me a M. P., and I couldn't sleep nights for worrying about it. But I got out of that all right, all right. How? Well, when it came time to do the arresting, I was hard to catch, that's all. So they dismissed me from the force."

Some one inquires if its true that bread is so scarce in Paris that you can be arrested for feeding crumbs to the birds. Another says whether it's true or not, America's good enough for him. As for France, well, all HE'S got to say about it



Courtesy of the American Red Cross

"THE FINEST SOLDIER IN ANY ARMY"

A "chunk of iron" from bursting shrapnel had buried itself in the flesh so close to his heart that the surgeons said he could not survive either, so he told them to cut away without the "knock-out drops." "And he never wiggled a toe," testifies the nurse.

is that if the Lord came on earth a second time he'd find this country just like he left it.

"Oh, I don't know," chimes in a third. "Some parts of it ain't so bad. You take Ix the Pains (Aix les Bains), for instance. Some o' my comp'ny went there for 'leave' and they said it's just grand. You're met at the depot with a automobile and taken to the RIGHT hotel. Guv'ment car, of course. At night you put your shoes outside the door and next morning they're POLISHED. And you can have your breakfast in bed if you want it. Oh, la-la, la-la!"

"DOC, I'M YOUR MAN"

The two enormous, open-windowed tents are crowded to capacity, and dotted all about the wide immaculate terrace are

men in rolling chairs. Only one is in a bed, and the nurse stops before him because she wants me to meet the boy known to all the hospital as the finest soldier in any army.

"Tell her about yourself," she orders.

"Why, there's nothing to tell," smiles Arthur, "except that I was wounded about a month and a half ago. They kept me in a French hospital until day before yesterday. They told me there was nothin' doin' as far as I was concerned. I said, 'You take me to some one that can talk my talk and then we'll see.' So they brought me here and the doctor looks me over and says the reason why they didn't cut was because the chunk of iron was too close to my heart, and so I couldn't stand to take ether. 'HOWEVER,' says he, 'if you're game

enough to let me do it WITHOUT knock-out drops—' So I says, 'Doc, I'm your man.'"

"And he never wiggled a toe," chimes in the nurse.

"But," says Arthur, "I didn't care for it much when I heard him saw."

As I step into the corridor to go from Geographic Ward No. 1 to Geographic Ward No. 2, I take a few minutes to jot down some of the things I've promised to bring next time. Here are a few of them: One detailed map of the American front; one small comb and mirror; one jar of jam (strawberry); one cheap volume of Shakespeare (any play); two bars of a certain kind of soap; one good lead pencil and some funny post-cards; one guide book of Paris and one nail file.

But I've got to stop here to make way for at least half a hundred soldiers to pass. They are wearing bath-robcs and house slippers and have nothing on their heads.

"THERE'S LONG-WINDED LIZZIE"

"SOME outfit for traveling," roars one. They all know they are leaving, but as to where they are going not one of them has the faintest idea. They'll pile into the waiting motor transports in the yard below, laugh and sing their way across town to a certain station, get on a train, and leave it whenever and wherever they're told to do so; for these are some of the "walking cases," which must be evacuated to make room for the swarms of newcomers who are due tonight. They almost knock me down in their eagerness for cigarettes, but in such a boyish, friendly manner that I can't possibly resent it.

Some of them light up immediately, while others remain to chat for a minute, and still others start whistling down the stairs. But everybody stops dead still when there comes a terrific BOOM!

"There's long-winded Lizzie again," says one. "By ginger! I'd like to lay my hands on the blankety-blank, gosh-dinged, double-dyed son of a sea-cook who does that dirty work. The ——!"

"Help!" I cry; and in my haste to get away from there I almost fall over a jolly big cripple, as he sails along in his "go-cart."

In answer to the usual "What happened to you?" I'm told that he was a gunner, trained to the minute. Only trouble was that he forgot to train his gun—haw, haw! So one fine morning she up and ran over his two feet and crushed them flat. "And that's all there is to that. Honk! honk!"

SERIOUSLY WOUNDED IN GEOGRAPHIC WARD NO. 2

Geographic Ward No. 2 is filled with very seriously wounded.

Entering, I make the regulation speech about having Sweet Caporals, Khedives, and Lucky Strikes; also Bull Durhams to roll. Unfortunately, I hadn't noticed in time that the poor creature just in front of me is trying not to wince as the nurse inserts a drainage tube in his fresh and frightful wound. His arm is off just below the shoulder, but he actually smiles as he says, "You see, I can't very well roll my own."

He seems glad to talk, and, because I can think of nothing more comforting to say, I finish with, "After all, it's your left arm, isn't it?" At that he laughs aloud, for HE had been left-handed.

I put a few blossoms on the second bed, where lies an agonized man whose eyes are out. I hear him whisper, "Good God, help me!" I see a rosary around his neck, and on the stand beside him, propped against a medicine bottle, a picture of two little girls. The wobbly, childish inscription reads: "We are praying for our dear papa."

The one in bed No. 3 says the doctor told him he had eighteen wounds, though he himself only counted seventeen. He was just UNDER the shell when it exploded, and so he got most of it. "I guess I'd have done better if I'd have stayed at home—I don't think," smiles he. "Volunteer?" I ask. "I should HOPE I was," says he.

The gasping, breathless one with shrapnel in his lungs doesn't like the smell of hospitals and wonders if I could bring him a bit of perfume. "The kind the fainting ladies use, you know," he grins.

The freckled-faced fighter next in line tells me, with great sparkling eyes, that the hole in his hip is bigger than his two hands and offers to prove it. He is so



Courtesy of the American Red Cross

BOTH GEOGRAPHIC WARDS IN THE NEULLY HOSPITAL ARE ON THE THIRD FLOOR, WHICH IS THE SUNNIEST, HENCE
THE CHEERIER

"There is a battered and banged-up American soldier in each of the twenty-four Geographic beds. It costs \$6 a year to keep him here—clean, beautifully cared for, and well nourished. But that sum cannot pay for the flowers on the tables, the phonograph and its records, the oranges in the afternoon, and the all-too-seldom ice-cream treat."



Courtesy of the American Red Cross

READY TO LEAVE THE HOSPITAL IN ORDER TO MAKE ROOM FOR THE EVER-INCREASING STREAM OF NEW ARRIVALS

They all know they are leaving, but as to where they are going not one of them has the faintest idea. These are some of the "walking cases" which must be evacuated in order that the more helpless newcomers, due at night, may be accommodated.

much better today that he is to be allowed to read a little. So I promise to bring him some funny papers. "Funny papers nothin'; I want rob-bers and mur-r-ders."

A boy who looks mostly bandages asks me to write to his mother. He's got "shrap" in his thigh, his shoulder, both arms, and his head. He cautions me to write the letter carefully, saying it's his right arm only, so she'll understand why he isn't doing it himself. And the last

thing he reminds me is to be sure to put in PLENTY of love.

"Why, of course I can smoke," smiles another, who hasn't any arms at all. "Some one is always coming in to do something for me, and I'm almost never without a fag. Keeps a fellow going, you know. It was the same way on the train coming here. The ones with all the arms did the cigarette rolling, and when we had to change, the ones with all the legs



Courtesy of the American Red Cross

A TRIBUTE TO A SLEEPING HERO

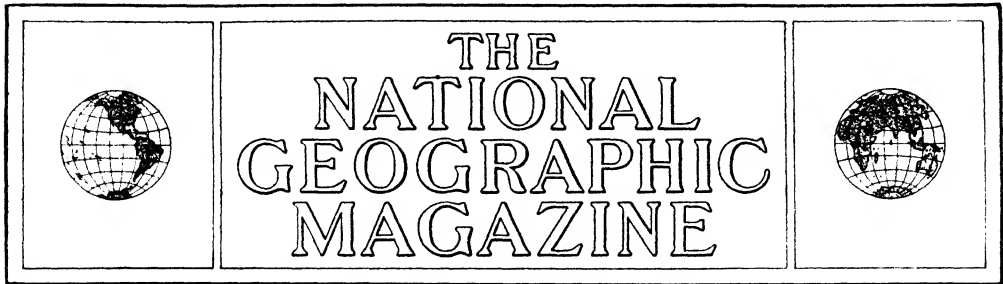
did the walking. Thanks awfully for the posy."

The shadows are lengthening on the wall, as I noiselessly leave this room of sorrow. From a little way down the hall, along with the pleasant clatter of aluminum dishes and knives and forks, comes the unmistakable smell of chicken gravy. The inmates of Geographic Ward No. 1 are already sitting up and taking notice. Soon the wheeled serving table stops before their door, and the funny boy, who, according to his own statement, "tried to stop a shell with his hand," jumps up to help. He wants me to know that there is rice to go with the gravy, and white bread, and new peas, and lettuce, and milk, and mixed stewed fruit.

I notice that boys whose bones are commencing to knit are also beginning to recover their appetites. And I can't help saying, "It COULD be worse, couldn't it, Yanks?"

The busy helper licks a finger and, gesticulating grandly with a dripping spoon, bursts forth like this: "Say, lady, listen:

When you haven't seen a razor for so long that your face looks like a barbed-wire entanglement; when you haven't had a drop of water except inside for four days; when you 'get yours' and somebody carries you over thousands of miles of bumps in a road; when the doctor plugs you up and says NEXT; when you're squeezed in a train for two days and two nights; when the ambulance lands you here and you say good-bye to your muddy outfit and your underwear that walks; when you're bathed and combed and your teeth are washed; when your fresh, white bandage doesn't show a single drop of blood; when you're put in a bed with sheets and a regular pillow, and the nurse comes round and gives you a pat just for luck and hands you something good to drink out of a cup; when you lie back and stretch out your legs and close your eyes—SAY, fellows! Ain't it a gr-rand-n-glo-ryus feeling? And say—just give a guess as to how we feel toward the members of this here National Geographic Society."



RUSSIA'S ORPHAN RACES

Picturesque Peoples Who Cluster on the Southeastern Borderland of the Vast Slav Dominions

BY MAYNARD OWEN WILLIAMS

AMONG conflicting details, coming principally from the two great Russian cities where food is scarce and humans and troubles are plenty, one fact sticks out like a church in a Russian landscape: The great empire of "one hundred and eighty million" which we have learned to mention so glibly is no more.

The old régime collected peoples like curios—the more curious, the better—and labeled them in Russian; but it never developed in these diverse and conquered peoples a spirit of nationalism. Pan-Slavism it could not inculcate, for a large part of its border subjects were of Ural-Altaic or Turanian stock.

Russia under the Tsar was unified only by force—a triumph of centralized autocracy over the "it doesn't matter, so never mind" spirit of subjects who in the mass were too indifferent and too lacking in group consciousness to resent oppression. The mass must ever be emancipated by the intellectuals, and by putting calloused hands above calloused brains and indomitable wills, Bolshevism is proving more reactionary than Tsardom in intimidating the individual without creating a State.

Tsardom counted no cost too great and no sacrifice too heroic, if the dreaded steam-roller moved on or the glacier of Slavic domination crept slowly toward

the Dardanelles, the Pamirs, or Manchuria. A two-mile bridge spanning the distant Amur or a daring military road through the heart of the Caucasus; a trans-Siberian railway or an imposing ecclesiastical building in Jerusalem—these were energetically supported by Tsardom and carried out with Russian funds, while Russians in the national capital were kept in unlettered ignorance and restricted to an economic condition little better than serfdom.

The many races which once formed the Russian Empire include the intrepid Georgians and the politically sluggish Sarts; the Cossacks, to whom battle is more than food; and the great mass of *mujiks*, supine in the midst of governmental chaos and wrongs perpetrated by a foreign signatory to a treaty of peace.

RUSSIAN VENEER OVER A TURKISH CITY

In December last, I visited Bayazid, the first Turkish city to be taken by the Russian army on the Caucasian front. The population was unmistakably Turkish. The red fez was a common spot of color in a dusty old city that tries to hide from the radiant gaze of Mount Ararat amid tawny hills, and the inhabitants prayed from a kneeling position instead of standing with bowed head or crossing themselves (for map, see page 277).



Photograph by M. O. Williams

AN ANCIENT PLOW AT DUSHET, ON THE GEORGIAN MILITARY ROAD, DRAWN BY TWELVE OXEN, WITH THREE DRIVERS AND A PLOW-MAN TO DIRECT THE PLOW: NOTE THE AUTOMOBILE IN THE BACKGROUND

A few Russian women could be seen wearing Paris styles a little out of date or with their heads swathed in the shawl of the peasant matron, and from one of the buildings there fluttered the Red Cross of the "Union of Cities" hospital, but the city was as Turkish as it had ever been.

The signs on the street corners, strikingly new in their blue and white, were printed in Russian. Those Russian letters in such a city were as exotic as in the Russian Concession on the Yangtse at Hankow. The veneer of Tsardom had been laid on over the Turkish city without changing its character a particle. Yet a Russian could find his way to the Russian post-office by reading signs in the Russian language.

RETREATING FROM THE TURKISH FRONT

That very day Russian *soldats*, freed from the yoke of autocracy by Tsar and bureaucracy and blindly assuming the attractive but heavier yoke of autocracy by the mob, were retreating in droves from the Turkish front, so eager to abandon all dreams of conquest or defense of territory in which they had no interest for one more visit with the home folks that many rode on the roof of the military train through the bitter cold of winter, 6,000 feet above the sea.

The veneer of Russian greatness, an outside show which had caused even Germany to fear, has peeled off. A boisterous wave of popular unrest and revolution, suddenly aware of Tsardom's weakness, but still lacking Tsardom's strength, has swept from the barren steppes south of the Caucasus to the dreary wastes of Lapland, and from the Crimea to Manchuria.

If once that great sluggish mass is roused to united action by the honeyed words of German propagandists, not only will the patchwork republic of Lenine and Trotzky be disrupted, but Anglo-Saxon ascendancy in Asia may give way to Teutonic hegemony—a Pan-Turanian* empire dominated by the militarism of Germany and led by the Timur and Attila of modern war.

* The Pan-Turanian movement aspired to an aggressive union of Asiatic peoples, especially the Ural-Altaic tribes. This menace to Indo-European civilization received the active secret support of German autocracy.



Photograph by M. O. Williams

A GEORGIAN BOY IS ONE OF THREE DRIVERS DIRECTING 12 OXEN DRAWING A PLOW
The same boy may be seen in the illustration on the preceding page. He rides on the yoke of one of his team.

But the present outlook promises a better sequel. The Armenians, who more than any other people have suffered from the Osmanli branch of the Turanian race, are still holding out in the Erivan plain and the hill city of Shusha.

The British, whose empire might suffer most from Pan-Turanian success, have trekked 700 hard miles from Bagdad and landed a party at Baku, the Pan-Turanian hub. Here lives Ahmed Aghaëff, Baku Tatar and chief exponent of Pan-Turanianism, principal in the Pan-Turanian conference in Constantinople four years ago, and editor of the widely spread

Turk Yurdu, whose aim is to awaken among a score of widely separated peoples a sense of their common tie. What the landing and presence of even a small number of British at Baku means, only one who understands the racial complexity and opportunist psychology of Transcaucasia can realize (see also page 275).

BOHEMIANS IN THE VOLGA VALLEY

The brave Bohemians, the most-discussed people of this year, who centuries ago helped repulse the Tatar hordes from the gates of Vienna, now hold the heart of the Volga Valley, with the capital of

Photograph by M. O. Williams

ON THE GEORGIAN MILITARY ROAD: THE DESCENT FROM THE KRESTOVI PASS TOWARD KOBI, ON THE TEREK
This great highway, one of the most beautiful mountain roads in the world, is more than 130 miles in length, running from Tiflis through Krestovi
Pass (7,800 feet above sealevel) to Vladikavkaz



the Kazan Tatars and Bulgari, the ruined city where fifteen centuries ago the Bulgarians had their seat.

Of all the varied peoples who inhabit that rabbit warren of humanity, the Caucasus, the Georgians are most interesting. With the Armenians, they form an important outpost against Turanian dangers. The great mountains that sheltered Shamyl and many another patriot have shut off the various tribes and races in secluded valleys, where they have retained their peculiar customs. Thus the mountains of Daghestan have kept that reclus among nations "an island in a sea of history."

But Georgia has been more or less fortunate, for the same pass that is now used by the wonderful Georgian Military Road, with its matchless views, has been the pathway for innumerable historic movements, and the valley which is now followed by the railway from Batum to Baku has been the caravan route of countless traders.

WHERE GEORGIA WAS BORN

A few miles south of the snow ridge of the Caucasus, there is a wretched little village whose fame should be world-wide. Mtskhket has claims to antiquity that make New England towns appear as embryos, for its citizens assert that it was founded by one of Noah's sons, who strolled over from Mount Ararat one day after the waters had subsided and chose this site because of its excellent drainage.

Beneath its terraced homes two rivers unite: the clear, cold Aragwa, hastening from its birthplace in the eternal snows of the Caucasus to the hot depression of the Caspian, and the Kura, sullied and dirty, swinging in from the west to make its way down the Tiflis depression and across the barren Transcaucasian steppe, between the mountains of Daghestan and the highlands of Armenia.

Damascus has a verdant freshness about it that is as deceptive as grease paint, but Mtskhket stands out from green fields and pastures new like a weathered, sharp-bowed fishing smack in an emerald sea.

On a rock cliff opposite this quiet city with the cat-fight name the kings of Georgia erected their first castle, but it was in

Mtskhket itself that Georgia was born. The Georgians admit their descent from the Accadians and Sumerians, but there is nothing in their appearance or personality to indicate their descent from anything. They seem to have ascended from the plane of other men.

Militant of appearance, handsome of countenance, chivalrous, and unfamiliar with hard toil, these lovers of wine, women, and song are as princely in bearing as the unwashed Bedouin before his desert tent. Part of them are mountaineers—the most picturesque brigands that ever carried an arsenal at their belts. The rest are agricultural people, whose contact with the soil does not prevent them from holding their chests up like soldiers in uniform.

The Georgian women conquered the Turkish rulers by the palace route, but the Georgian men are handsomer than their wives, and in Georgia the male wears the fine plumage. But he treats his wife and daughters well and never allows them to act as servants.

There is so much strength in the Georgian face that the women lose their greatest charm by the time they mature. The classic nose is too noble to be pretty, the straight, large mouth shows determination rather than a Cupid's bow, and the fine eyes soon dominate a face that is manly in its beauty. In the Tiflis Red Cross cafés one may see scores of Georgian women with short, curled hair who could pose as Belvedere Apollos, but never a Venus.

St. Nina established a Christian church in Mtskhket about 347 A. D., which was for many years a center for Christian culture. The Georgians assert that they were Christians before the Armenians, and vice versa; yet the princely but spendthrift Georgians and the oppressed but wealthy Armenians have been so much mixed throughout their history that there are today persons who call themselves Georgians and who speak Georgian, but who attend the Armenian church, while Armenians speaking Armenian are often found in Georgian churches.

The Georgians are good hosts and the Armenians are shrewd business men. That is why the Golovinski Prospekt in



Photograph by M. O. Williams

GERGETI, THE CENTER FOR A GROUP OF MUCH INCLINED FIELDS FROM WHICH THESE MOUNTAINEER GEORGIANS EKE OUT A
FREE LIFE

"Of all the varied peoples who inhabit that rabbit warren of humanity, the Caucasus, the Georgians are most interesting. With the Armenians, they form an important outpost against Turanian dangers."

Tiflis, one of the proudest avenues in the world, is owned by Armenians and brightened by the presence of the Georgians, the handsomest young people one can find in Asia.

GEORGIA'S DECLARATION OF INDEPENDENCE

On October 14, 1917, I attended the investiture of the Georgian Katholikos at Mtskheta, the first in one hundred years. This was the first step this militant people, who had chafed under the burden of Tsardom, made toward independence. The affair at Mtskheta marked their religious autonomy and freedom from the Russian Church. On May 26, 1918, after the Turks took the Batumi and Kars districts, thus leaving only historic Georgia to the Transcaucasian Republic, the Georgian Diet declared their independence, thus virtually ending the Transcaucasian Republic, in which Tatars had had four representatives to Georgia's three.

Whether Georgia can hold out against the Turks and Germans remains to be seen, but of one thing we may be sure, Georgia will never tamely submit to oppression. She flirted with Germany's Pan-Turanian schemes and as late as June 19, 1918, was forced to send delegates to Constantinople to confer with the Central Powers; but Georgia has never relished the idea of subservience and she may hold out till relief can reach her.

Every train entering Mtskheta on October 14, 1917, was packed to the doors. Crowds of young men from Tiflis rode on the roofs in order to see the colorful drama of the rebirth of a proud nation. It was not until the procession between the tiny station and the stately church was formed that order appeared in the kaleidoscopic scene.

A PICTURESQUE PROCESSION

At the head of the line was a handsome Georgian, bearing aloft a blue silk banner inscribed in silver with Georgian characters and surmounted by a silver disc which bore the picture of some great saint. He was dressed in soft black boots, a dark-brown *tcherkeska*, with its narrow waist and flowing skirts and cartridge cases across the breast, and wore the small Georgian skull cap; but as

necessary as his dress were the sword and dagger and, strange anachronism, an automatic pistol in a brand-new russet case at his hip. Death-dealing weapons are still articles of ordinary dress in Georgia.

The color-bearer was flanked by two swordsmen in wine-colored plush doublets edged in soft fur, scarlet trousers, soft white-leather boots with gold tassels, and anklets of soft white leather with narrow stripes of red leather trimming.

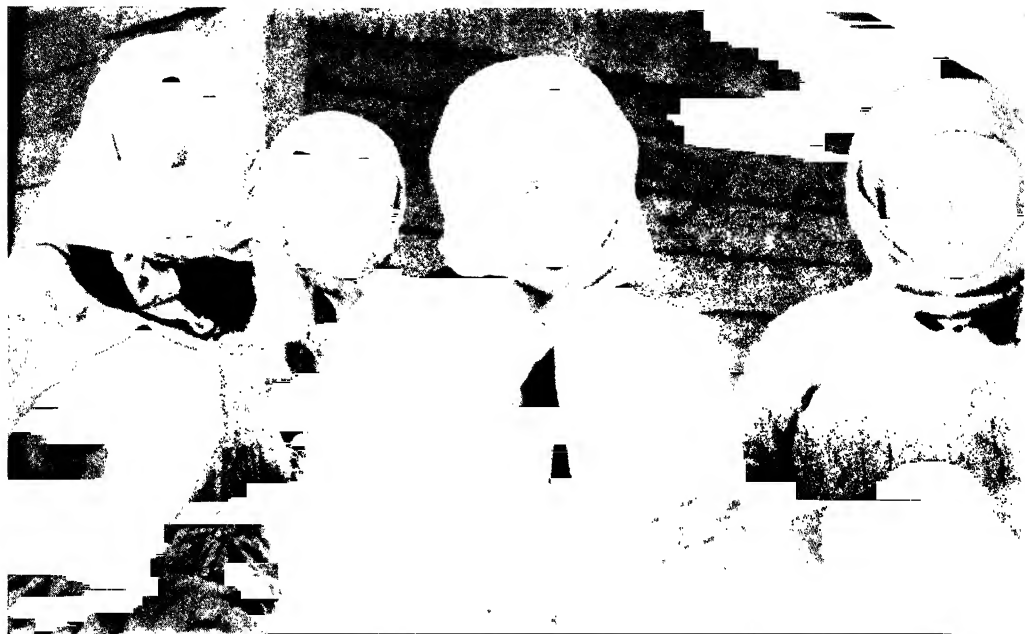
Behind them came thirty or more male singers, gaily dressed and followed by a band of young women wearing Marguerite braids which reached below the knees. Over their close-fitting bodices of figured silk in soft tints of gray and blue they wore flowing velvet cloaks of delicate blue edged in fur. Their skirts, of queenly length, were paneled in the same soft tinted material as composed their bodices and their soft boots were hidden except for the shapely toes.

Then came a huge motor-car, crawling along with all the dignity due its chief occupant, the Katholikos-to-be. Forming a daisy chain about this ecclesiastical chariot were forty or more young Georgian girls, their smooth cheeks flushed beyond their usual fine color by the excitement. Most were dressed in simple white, against which their raven hair and rosy cheeks showed lively contrast, but a few wore tailored suits and small hats in the latest European style.

OBSERVERS OF THREE HOLY DAYS EACH WEEK

Behind these lovely ladies came gaunt Khevsurs, wearing chain coats of mail and chain helmets. Their straight swords were double-edged and each carried a small shield decorated with appliqué figures. Their small, wiry horses sniffed restively at the fumes of the motor-cars, resenting more than did their ruddy-haired masters this anachronism of eight centuries gap.

The Khevsurs wear the cross on their clothing and are the champion religionists of the world, for they observe the Christian Sabbath, the Jewish Saturday, and the Mohammedan Friday, and their religion is a strange mixture of all three beliefs with paganism. An early French traveler started the story that they were



A GROUP OF THE FAMOUS GEORGIAN WOMEN

The woman in the center has her hands full of a peculiar candy made by stringing walnut meats and covering them with a gelatinous substance formed by boiling down grape juice



Photographs by M. O. Williams

SOME GEORGIAN BOYS ALONG THE GEORGIAN MILITARY ROAD NEAR KASBEK

Part of the Georgians are picturesque brigands; the rest are agricultural people who have lost none of their pride of race as a result of their contact with the soil

descendants of some Frankish Crusaders who fell in love with Georgian womanhood and forgot the Holy Grail in the midst of Georgian loveliness; but a matter-of-fact and very erudite Georgian scholar in Tiflis spoiled that story.

Inside the church, erected on the spot where the unseamed vesture of the Christ was found, after having been brought hither from Golgotha by a Jew, there lie buried many of the proud but ill-fated line of Georgian kings, the last of whom, George XIII, ceded his territory to Russia in 1801 and died that year, broken-hearted, a true ruler, who could not conquer and therefore faced the only alternative—death.

Sixteen centuries have passed since the first Christian church was erected on that site; yet in the necropolis beyond there are remains of broad-headed men of the Iron Age, compared with whom Heraclius, Queen Tamara, the Guramides, and the Pharnavasians are unromantic moderns. They could tell of times before Prometheus was bound to the heights of Kasbek and Jason came hither in search of the Golden Fleece. Mtskheta is ancient, but it is only a way station on the great highway of history across the mountain barrier which bridges the land-masses of Europe and Asia.

Georgia's relations with Russia should have a peculiar interest for Americans, for the King of Kakhetia sought the protection of Ivan III the year Columbus discovered America, and our Pilgrim



Photograph by M. O. Williams

A GEORGIAN MOUNTAIN GIRL OF GERGETI ON THE SLOPES OF KASBEK

There is so much strength in the Georgian face that the women lose their greatest charm by the time they mature. The classic nose is too noble to be pretty; the straight, large mouth shows determination rather than a Cupid's bow.

Fathers were about to embark for the rock-bound coast when Georgia, harried by Persia, appealed to Michael, the first of the Romanoffs, for protection. While our first Federalists were drafting our Constitution, Heraclius II declared himself a vassal to Russia. Last October, Georgia planned to be one of a group of autonomous States that would be the nucleus for a federated Russia.

WOMAN SUFFRAGE IN THE CAUCASUS

"I divorce you three times!" The silk-clothed Tatar with his well-trimmed



Photograph by M. O. Williams

TWO TEKKE TURKOMANS ON THE STEPS OF THE MILITARY MUSEUM AT GEOK TEPE

The Russians insult the Turkomans with pictures of the Russian victory and Tekke cowardice, but there is about as much cowardice in a Turkoman as there is milk in a milk-snake. One of these fighting men wears the Georgian Cross (see page 259).

beard evidently meant it, and the veiled figure opposite him should have quailed before the idea of widowhood. But she didn't. That was one of the incidents I saw in connection with the election of the Transcaucasian Government in Tiflis on the day that ill-starred little republic was born. One of the wives of a prominent Tatar had voted a different ticket from the one her husband had advised, and, womanlike, once the ballot was safely and secretly deposited, told her husband about it. Such are some of the primer steps toward modernism in Georgia.

High over the city circled an aëroplane, with its clatter drawing the attention of the people. The day was clear and bright and the streets crowded. Thousands gazed aloft to watch the movements of the machine. It crossed the Kura, which divides the shoestring city along its banks, passed over the Golovin-

ski Prospekt, and turned toward its hangar to the east.

Then suddenly there fell from the plane a dazzling shower of huge snowflakes, which grew and grew, volplaning and whirling until a few reached the outstretched hands of the people below. The Bolshevik occupants were bombing the election crowds with Bolshevik literature. Electioneering in Tiflis was not without its picturesque side.

In the theaters on the night before, the lights had scarcely flashed on after the first act when from a dozen places in the top gallery showers of flyers were dropped onto the heads and laps of the gaily dressed throng. Through the day automobiles, with their exhausts roaring and decorated with the numbers of the different political parties, dashed through the fine streets, campaigning for votes.

Posters were pasted to almost every-



Photograph by M. O. Williams

TEKKE TURKOMANS AND RUSSIANS ON THE TRANS-CASPIAN RAILWAY

"The Tekke Turkomans are huge, fine-looking men, who wear sheepskin hats a foot high. They owe as much of their charm to their fantastic headgear as does a stage beauty."

thing within reach, and in some cases the poster of one party had been covered by the poster of another. Plate-glass windows on finer shops than most American cities boast had been daubed with paste and plastered with posters, and few indeed were the shop-keepers who cared to scrub off these disfiguring sheets before the election was finished. Crude numbers indicating the various parties were scrawled here and there, reminding me very much of college days when the Freshies painted "1911" on every available spot and the Sophs changed the last figure to a zero to show that the class of 1910 was still on the map.

SIXTEEN POLITICAL PARTIES IN CITY
CONTEST

The election in Tiflis was hardest on street-cleaners and most profitable to printers, for every party seemed determined to surpass every other party in the number of flyers they could scatter on

the streets and in all public places. For months to come the buyer of small notions in Tiflis will carry home his goods in a slip of paper naming political candidates. One of the sixteen parties in a city where 100,000 votes were cast printed 2,000,000 flyers.

Some of the parties published booklets explaining their position, and party platforms fell on the people from all sides. When a people to whom the ballot is new undertakes to choose from among sixteen parties, it takes a judicial mind. But most of the people seemed to have decided in advance what ticket they would vote, for I found no one who could give me the names of all the parties represented by the sixteen numbers.

Number 1, the Minshevik branch of the Social Democratic party, polled nearly a third of the votes cast. The Armenian Federalist party came second with two-thirds as many. They were followed closely by the Bolsheviki, most of whose



Photograph by M. O. Williams

A TEKKE TURKOMAN AT GEOK TEPE, THE
SCENE OF SKOBELLEFF'S VICTORY
OVER THE TURKOMANS

votes were cast by Russian soldiers still stationed in Tiflis. They were the ones who utilized the aeroplane as an electioneering factor months before it was proposed to distribute propaganda in this manner behind the German lines.

After the Bolsheviks came the Party of Popular Freedom, and next came the Cadets. The Zionist party polled 781 votes and a party called the Moslem Union of Russia, represented by number 14, did not get a single vote. Number 13 ran a close second for consolation honors with a solitary ballot.

Men and women voted together, rode in the same electioneering automobiles, distributed flyers together, and in general

showed an absolute equality of opportunity and willingness to make use of it. The voting was heavy, amounting to one vote for every five inhabitants of Tiflis.

In spite of the heavy vote, there was little excitement during the three days of election. There was talk of intimidation by the soldiers, but I could detect no evidence of it. Soldiers were prominent in the air-warming oratory in front of the voting places, but those I saw seemed content to listen to their own eloquence without using more forceful measures.

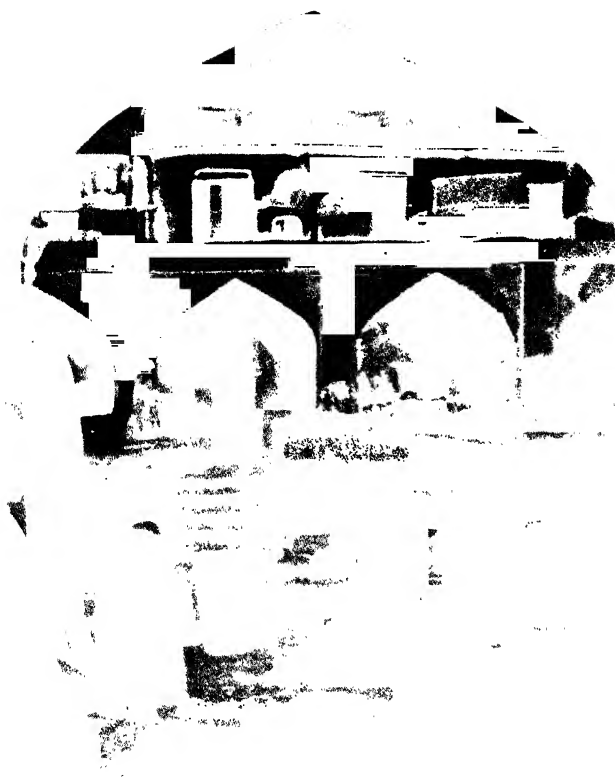
Out of eighteen thousand Bolshevik votes, the Russian soldiers cast twelve thousand. Prisoners were allowed to vote, and 246 out of 250 voted the Bolshevik ticket.

THE SIZE AND EXTENT OF TURKESTAN

Our doorway to Turkestan was Krasnovodsk, a mediocre city consisting of a railway station, two churches, several wharves, and other small things too numerous to mention, but not too insignificant to make their presence felt. It has spread itself out at the base of some tawny hills very much like the African hills along the Red Sea and basks in the desert sun with a supreme disregard for its own slovenliness. Not only is the railway station the main architectural feature of the town; its sentimental value is only equaled by that of the several wharves. Some say that history emigrated from Turkestan. If it ever emigrated from Krasnovodsk, it simply obeyed the common impulse.

Turkestan begins in the west by being a land of desert, dust, and dreariness and ends in the east in lovely and fertile Ferghana. Its inhabitants insist that in spring there are green spots here and there, but in few places is there enough rain to give an annual house-cleaning to the dusty trees and shrubs.

Turkestan, including the Khanate of Khiva and the Emirate of Bokhara, both of which now claim independence, is three times as large as Texas, yet it was almost lost in the Tsar's domains. It has as many people as New York and Massachusetts combined and there are as few Russians as there are native-born Americans on Manhattan Isle. Its two largest rivers empty into a sea about the size of



Photograph by M. O. Williams

A BOKHARA KHAN LOOKING IN FROM THE DARK PASSAGE THAT LEADS TO THE COVERED BAZAAR: GREAT WEALTH IS SOMETIMES CONTAINED HERE

Like many another ancient city, Bokhara does not owe its permanence to brick or marble. A good rain would wash away its crumbling walls and mud houses. It is being continually patched and rebuilt, never completely old and never wholly new.



Photograph by M. O. Williams

A SON OF THE DESERT VISITS BOKHARA

"When the nomad comes to town he's sure to be done brown; the dealers cheat, the Mullahs pray, and the poor guy's broke ere he gets away to the desert"

Vermont, New Hampshire, and Massachusetts, and do their best to keep it from drying up into a salt pile; but they are slowly losing the battle.

The first point of interest along the railway is the Akhal Oasis, which can easily be distinguished in spring, but resembles the desert in late fall and winter. It is the largest oasis in Turkestan, 160 miles long and 10 miles wide. Here dwell the Tekke Turkomans—huge, fine-looking men, who wear sheepskin hats a foot high. The Turkomans owe as much of their charm to their fantastic head-gear as does a stage beauty. When they remove them and reveal the shaved heads and gaudy embroidered skull caps beneath, they seem commonplace; yet there are many of the older men whose majesty of bearing is not a matter of costume alone. Their red cotton khalats give them a princely stateliness which the trousered and booted Russian with his shirt flopping lacks.

AMERICA'S LOVE FOR RUGS CHANGES AN ORIENTAL PEOPLE

If some one asserted that the American love for Oriental rugs had changed the marriage customs of a nomadic people, had brought forth on this globe a comparatively homely race of human beings, and had built up a complex system of morals in the heart of Asia, it would seem like a sensational story.

Yet that statement seems well founded, and love for beauty in America has reacted on the facial features of a princely race in Turkestan with deplorable result. Truly it is a small world when an artistic recluse in a New York studio fathers a homely son in a distant desert. Yet the rising generation of Turkomans are distinctly homelier than their princely sires. And the conquest of their domain by Russia does not entirely explain it.

The Tekkintzi rug, more commonly known by the less distinctive name of Bokhara, is the loveliest product of the desert loom. Its charm lies not in intricacy of design, manifold detail, or symbolic meaning. It is not a picture in wool. Brilliancy of coloring it does not have. But in richness of tone the Tekkintzi wins its rightful place as queen of rugs.

Its symphony of soft and sober color has its major and minor chords. From one direction it is dark and quiet and soft. But as the light strikes down into its velvety nap, it shines with a light overtone and reveals a sheen like that of silk, such as can come only from years of contact with the flexible, high-arched feet of the desert mother or the heel-less boots of her master.

Years of care in selecting the long-fibered, spotless wool, in dyeing it in reds from Bokhara, blues from Afghanistan, or blacks from Merv, with a touch of orange or yellow now and then, and in weaving it beneath the hot sun of the dry desert, give the Tekkintzi a character which more hurried methods cannot give. It reveals no trace of foreign accent, for its language of lasting beauty is bred in the blood.

When one sees how well the erect Turkoman, with his stalking camel or his loping horse, fits the desert vastness he wonders why the Russians were able to humble him as they did. God gave him life and boundless pastures for his flocks, and while he sat in solemn council or rode the boundless plain, with a wobble-kneed colt at the heels of his light-foot mare, his wife wove rugs and found in them expression for the artistic in her nature and its desire to make itself known.

Then came the Russian glacier, creeping down toward India, and the fearless nomad was cruelly beaten in his own field by the well-armed fighters of an agricultural race. The locomotive came to shriek derision at his train of stalking camels, and a band of shining steel cut its burning way across his trackless desert.

Then the trade in rugs, which had begun as a matter of art and individual choice, became a commercial transaction. As the pastures became smaller, irrigated plots made it possible for the nomad to become agriculturalist, and the dweller of the *yurtch* began to buy with the product of his wife's labor the frames for his felt hut, instead of making them himself from the reeds of the marshes. The old roaming life was gone and mud huts, plain and square, began to grow up from the desert plain, usually centering about a homely station building. Not flocks but rugs became the source of income.



Photograph by M. O. Williams

IN THE BAZAAR AT MERV

The legend and history of Merv date back many, many centuries before the Zoroastrian Books of Wisdom told of the haven that prehistoric man sought and found in the great oasis which bears the name of the present town.

For centuries, possibly extending back to the Iranian peoples whom Alexander found here on his way to India, the Tekke maiden had been taught to dye and weave. When she was married to her Mohammedan husband, the young bride took with her to her master's hut the rugs her patient toil had formed, and he in turn paid a corresponding price to her parents. Her dowry was her skill and its product. She was a menial, but with the soul of an artist. Her toil was long,

but it was not drudgery. She was not a slave, for her work demanded the inspiration of a soul, and she had an enviable position compared with that of many of her Oriental sisters in polygamy.

Gradually these masterpieces in mahogany, deep chocolate, terra-cotta, old rose, burnt orange and black found their way to America, where their appeal was irresistible. Buyers raced one another across Europe into the Transcaspian home of history to secure the priceless



Photograph by M. O. Williams

YEARS OF CARE ARE REPRESENTED IN EACH OF BOKHARA'S RUGS

Around the Merv Bazaar are small sheds to which the wholesale buyers remove their wares and store them or display them to those who were not lucky enough to see them first

treasures of a conquered race. The skill of the Tekke woman began to win its reward. Her genius had caused the art world to wear a path to her hut and her open-air loom. But there was the unhappy side.

THE TURKOMAN TAKES AN INFERIOR WIFE

Only the rich young Turkomans could afford to buy a wife at the exorbitant price her skill made possible. Parents raised the price of their daughters, con-

soling themselves with the fact that if they could not produce offspring they could at least produce valuable rugs. The age of marriage became higher. Caught in the trap which skillful women had woven, the young men revolted from the exaggerated demands of the avaricious and unromantic parents and sought cheaper wives elsewhere, while Tekke women, robbed of love and enmeshed in their own skeins of fine wool, dragged out busy lives of hated spinsterhood.



Photograph by M. O. Williams

STRIKING A BARGAIN AT MERV

The buyer and seller grasp hands to feel out the opponent, and when they seem to be in deadlock a third man steps in to arbitrate. If it is a go, they shake hands once more with the money between the palms.

The Turkoman was a fine, erect man, whose real height was accentuated by a massive, shaggy sheepskin shako till he seemed a veritable giant. To the princely bearing of the Bedouin he added the militant charm of the drum-major. His fine features were cruel but handsome. His nose was straight, his chin strong, and his face oval. He was handsome and he knew it. With American methods he could have won the hand of any wife he chose. But he was forced by custom to

follow the method of barter and his purse was as thin as his lips.

Among the Persians, Kirghizes, and Sarts this militant Romeo bought wives for a tenth what a Turkoman woman would cost. But he had to pay the price in the irregular features and smaller bodies of his offspring. Commerce robbed him of his proper mate and put in her place an inferior woman who bore homeliness instead of beauty. Rugs fought with humans and defeated them. But the



Photograph by M. O. Williams

A JEWEL OF THE ILAND LOOM

When a small dealer in Merv wants to sell a rug he drops it over his shoulder thus and acts unconcerned; that gives the impression that the rug has merits that need no salesmanship.



Photograph by M. O. Williams

THEOLOGICAL STUDENTS ARRIVED IN THEIR RAINBOW FINERY SEATED BEFORE THE MIR ARAB: BOKHARA

Six colors in a single Bokhara male costume is considered a monochrome. Bokhara is a mud flower-pot containing every conceivable color of flower and every one is a male.

demand for rugs, like the demand for wives, brought its own unhappy sequel.

THE RUG-WEAVING ART FINALLY COMMERCIALIZED

The supply of fine old rugs was insufficient and new ones had to be made more quickly. Women who had not learned the complex processes of manufacture began to produce rugs for the brisk market. Persian, Sartian, and Kirghize women began to set up frames and turn out a product that showed their lack of artistic taste. Aniline dyes became common, and coal-tar yielded colors so hideous that artificial aging methods had to be resorted to. The market in a depreciated product began to decline.

The young men not only could not afford a Turkoman wife; even the Sart and Kirghize women became a burden rather than a source of income. The Turkoman, whose religion is lax and whose ideas of social intercourse are the same, became the first nominal Mohammedan to forsake polygamy for indiscriminate prostitution; and in Bairaṃ Ali today there exist great buildings devoted to this shame produced by the commercialization of art.

Nineteen seventeen was a bad year in Turkestan. The Russian Government had encouraged the growing of cotton for its Moscow factories instead of food, and with the disorganization of the railways by Bolshevik troubles and the long drought, both in the Afghan Mountains and in Turkestan, food became scarce and dear. Hunger forced priceless rugs into the market, and when I visited the rug market at Merv there were thousands of specimens, where the autumn before there had been dozens.

Many of them are the best quality that has been seen for a decade. When the well-to-do American secures one of these art treasures from the cradle of civilization, he has a product whose value increases with every year, unless he mars with heeled shoes an art study in wool which was not intended for such use.

But it is a small world nowadays, and back of many a rug that will find its way to America after the war is a desert woman robbed of her mate by the skill of her hands and the avarice of her parents;

a homely little son of a handsome father and a bought woman from another race; and a great brick brothel in Old Merv, rising beside the ruins of ancient cities that reach back to the time of the Persians, the Uzbeks, the Mongols, the Arabs, the Nestorians, and the Seleucidæ, and beyond into the remote ages before the Zoroastrian Books of Wisdom told of the haven that prehistoric man sought mid the shifting desert sands and found in the great oasis of Merv.

THE CHARM OF BOKHARA

Farther east lies the romantic mud flower-pot of Bokhara, which might be any desert city inclosed in crumbling walls and composed of mud houses which have almost no windows on the streets. A good rain would wash it away, and if left to the ravages of time this ancient city would soon sink to the level of the dust from which it was constructed. But Bokhara, like many another ancient city, does not owe its permanence to brick, marble, or reinforced concrete, and it will probably survive for a few more centuries, patching up here and rebuilding there, never completely old and never wholly new.

There are some charming spots in Bokhara, but it is a city lacking in architectural interest. There is a very romantic tower from whose top, 200 feet above the courtyard of the mosque of which it is the minaret, criminals used to be hurled headlong to their death. This high minaret, which has all the grace and charm of a monolithic smokestack, is almost the only break in the skyline. But the people of Bokhara are absorbingly interesting and their principal charm is their dress.

A solemn old Bokhara mullah wears as his flowing robe a garment whose colors would have made Joseph in his famous polychrome coat appear to be practicing camouflage in a dust bin. An American dandy chooses just such colors for his necktie and then hides it under his vest to keep the city from calling out the fire department.

Six colors in a single Bokhara male costume is considered a monochrome, and the rainbow is a colorless aggregation of dull tints compared with what is considered sober apparel for a Bokhara Tatar.



Photograph by M. O. Williams

BOKHARA THEOLOGUES

And two Turkomans who had to find some excuse for getting into the picture. No, only one is a Turkoman; the one with the close-clipped cap is an Uzbek.



Photograph by M. O. Williams

THREE BOKHARA THEOLOGUES IN FRONT OF MIR ARAB

In Bokhara on Friday spotless white turbans are the rule, but a riot of rainbow tints is to be found in the costumes beneath that white headgear

In Merv a crowd looks like a great mass of shaggy, black chrysanthemums, on account of the sheepskin caps worn by the Turkomans. But in Bokhara on Friday spotless white turbans are the rule; and under those turbans purples, blues, scarlets, yellows, pinks, and greens of myriad hues. There are blazing yellow suns on dark-red backgrounds and barber-pole stripes in a dozen colors.

There is just one color effect that the

Bokhara man has not yet learned. He does not accordion pleat his gown and make it of alternate strips of crimson and white silk, so that it ripples from white to red and back again with every step. The man who introduces that effect to the Board of Deacons of the Common Council of Bokhara Religions will surely win fame and fortune.

Bokhara is a mud flower-pot containing every conceivable color of flower and



Photograph by M. O. Williams

THEOLOGICAL STUDENTS IN BOKHARA, SHOWING THE FINE CARVED DOOR, THE
MAIN ITEM OF ARCHÆOLOGICAL AND ARTISTIC INTEREST

every one is a male. A Bokhara woman has no place in the color scheme, unless it be as a neutral background. She hides behind a horsehair veil four feet by two and wears a cloak of gray that conceals any fascination she may have. The prettier ones wear thinner veils than the grandmothers. Oriental veils will continue to be considered a means of punishment, but as far as the man on the outside is concerned, they are, more often than not, a kindness.

WHERE "EVERY FRIDAY IS EASTER SUNDAY"

The Friday service in the Registan in front of the Emir's castle is most impressive. From the entrance of the ark the cobbled square slopes down to the melon stalls and fruit venders' shops at the lower end, from whose shelter even a foreigner can observe the ceremony.

Stretching down the incline from the wide doorway is a line of white-bearded Moslems dressed in their heaviest silks and broad silver belts, standing on such glossy, faded rugs as never reach a dealer's hands. Fifty or sixty feet lower down there is a cross-line of other worshipers. There in the bright sun of the market-place, forming a color picture that only an Eastern sun could harmonize, hundreds of men bow and kneel and rise in unison. The timing of their movements is perfect. One sees broad silk-clad backs and massive white turbans at one instant and white beards and erect forms the next. Larger groups of worshipers may be seen in Samarkand and Delhi; but nowhere will one see a finer grouping of color. Every Friday is Easter Sunday to the Bokhara Moslems, and the kindly sun of the desert softens and harmonizes the varied scene into a pleasing whole.

THE BAZAARS OF BOKHARA

Not only are there varieties of color, but of race as well. Persians, Jews, Hindoos, and Armenians mingle with the Sarts, Uzbeks, Tajiks, and Afghans. Tatars and Turkomans can be seen side by side with the Mongolian Kirghizes, and even Chinese wander through the maze of covered bazaars or swing across the brilliantly lighted squares. If Bokhara

resembles a crocus or pansy bed in color effects, it resembles an anthropological museum in types of nose, mouth, cheekbone, and eyes. But on all sides one sees the broad face, high cheek-bones, and round head of the Turanian.

The bazaars of Bokhara are her main charm. Even Damascus has nothing finer. The streets are covered and the lights subdued. Each tiny shop, a Mother Hubbard cupboard in everything but emptiness, where the shrewd merchant sits with his entire stock within reach, has a rug at its tiny front porch, where the customer can sit and smoke or drink tea until the bargain is complete.

One can see processes as well as products and hours may be spent in watching the fascinating handicrafts of the East. The brass-ware is inferior to that of Damascus, but adds a mellow glow to the long, dark bazaars, and gaily-colored saddles and gaudy velvet caps, edged with glossy fur, light up the scene.

Bokhara is a very important religious center, with 364 mosques. Why not one more, with a temporary tabernacle for leap years, it is hard to say. But the Moslem year is shorter than ours, so that perhaps they have enough mosques for one mud city. There are more than a hundred theological colleges, with small rooms for the students surrounding a paved quadrangle from the corners of which rise small domes surmounted by stork nests.

THE BOKHARA MOSLEMS

The Bokhara Moslems are ceremonialists to the tips of their fingers. They have shifty eyes, intellectual faces, and indolent bodies. Many of them are fat and greasy. One will see more fat men among the worshipers at Bokhara than he will in weeks of travel in Georgia or among the Turkomans. The Moslem religion fits a sleek beard and a fat body, and it is no wonder that the Turkomans are considered very poor churchmen.

But if one would really know the charm of Bokhara and its Oriental spell, he must not alone thread the murky bazaars, where the copper-workers' fires cast fantastic shadows on the tiny shop-faces opposite, or sit at the busy braziers eating



Photograph by M. O. Williams

A PERSIAN COBBLER IN ASKABAD, WHICH IS ONE OF THE CITIES FROM WHICH THE
RUSSIANS HOPED TO ENTER PERSIA VIA MESHED

spitted mutton with a loaf of unleavened bread as table and fork, or satisfy the thirst of the desert with rosy pomegranates, luscious apples, or aromatic muskmelons from Chardjui, with almond and raisins to cke out his Oriental meal.

Let him seat himself beside one of the picturesque, but stagnant, pools, whence Bokhara derives its water, while the shades of evening silently settle about the quiet city. The Emir has tried to protect this Oriental spell by forbidding a hotel within the gates, and the last of the Russian business men have commuted back to their homes in Kagan. But the gates will not be shut for some time yet, so take time now in this most Oriental of cities to feel a little of the philosophy that takes pride in the past and thinks not of the morrow.

“TWILIGHT IN BOKHARA

Three veiled women come down to the water's edge, their shrouded forms reflected in sombre tints from the afterglow which leaves its rosy blush in the fringe of sky behind us. Now from behind one heavy veil there emerges a snow-white arm which dots with a touch of light the watery mirror of the quiet pool. In and out flits that firm, slender arm with its heavy gold bracelet until she turns to her companions and they all climb the slippery steps and fade away into the shadows of the roofed bazaar.

Following her comes the water-bearer with his flabby water skin, which he slowly fills through the neck from a leathern bucket until it becomes bloated and full-bodied as some huge amphibian. Some of the water splashes back into the dark pool in a silvery stream edged in pearls. And the music of its falling merges with the musical street cry of the passing peddler of sweets, who is trying to dispose of the rest of his tiny stock before night settles down.

Here at last is the East. Not Damascus, with its tourist hotels and shiny victorias; not Jerusalem, its ancient wall rent by the Kaiser's gate and its glaring clock-tower; not Cairo, with street-cars clanging by and evil-minded touts dogging one's footsteps; not even Constantinople or Delhi or the lovely, but lifeless, dream in marble at Agra, can quite match

the charm of old-world Bokhara, dusty and tumbledown, with its seared face toward the glorious past, when Merv was queen of the East and Bokhara was her rival.

Then, as night really falls, we hasten through the deserted bazaars, barred and covered on both sides, where infrequent and dim electric lights can't quite spoil the fanciful effect, past great khans, in whose courtyards solemn, thoughtful camels ponder over problems of their own with supreme lack of concern for the rough stones that bruise knees once accustomed to soft sand beneath the stars. Here one old patriarch roars like a lion while his turbaned master beats him to his wrinkled, calloused knees.

And as we emerge from the dilapidated old walls of this dusty mud flower-pot a muezzin up near the scraggly stork's nest that tops the minaret sweetly intones the call to prayer. Beside us in the dusty road a string of tawny camels, grotesque in their ugliness, but picturesque hulks against the leaden sky, plod silently by on padded feet which sink deep into the soft dust of the Oriental desert.

THE TOUCH OF TIME'S LOVING FINGERS

What costume does for Bokhara, architecture did for Samarkand. The Registan, once the show-place of Central Asia, still retains much of its former beauty, for the tinted tiles which encase the imposing façades of the mosque schools of Shir-Dar, Tillah Kari, and Ulug Beg have retained as much of their Oriental brilliance as is pleasing to the Western eye. Time has touched the tiles of Samarkand with loving fingers, leaving all that was beautiful and nothing that was garish.

And the crowds which flock the great market-place today add interest and animation to a historic and dignified plaza. The costume, the facial make-up, the method of transportation and bargaining, all are much what they were when Timur had his capital here, although the medressehs, which form three sides of the Registan, are of a much later date, erected while our colonists were settling Jamestown.

Outside the native city, with its sellers of melons and menders of shoes, its hun-



Photograph by M. O. Williams

RELIGIOUS FAKERS IN THE REGISTAN AT BOKHARA

Posters announcing the latest "movie" are plastered on the mud wall to the left

dreds of praying men and its tasseled boxes made from gourds of fantastic shape for use with pea-green tobacco powder, one sees tilework at its best, dating from Timur's prime. Here are found the beautiful mausolea of Shakh Zinda, erected by the monarch whose empire reached from Siberia to the Dardanelles and from the Ganges to the Persian Gulf.

A JACK-OF-ALL-TRADES ARMY

That Timur the Lame, whom Marlowe pictures as a crude barbarian, was not without culture as well as kultur is shown by the fact that these mausolea were erected to the nurse, the sisters, and the spiritual adviser of the great nomadic chief who captured Delhi and Tiflis, Damascus and Aleppo, cities now coveted by Hadji Wilhelm of Potsdam.

In the shadow of the huge Mosque of Bibi Khanum, which Timur erected to his favorite wife, the great grain and dried fruit market is now held, for the fertile valley of the Zerafshan produces heavy grain, luscious grapes, and thin-shelled almonds, as well as the juicy melons which one buys, after sampling, in great drippy slices, in the Registan.

Timur's army was a Jack-of-all-Trades horde, for each fighter not only carried a bow with thirty arrows, a quiver, and a buckler, but for every two mounted fighting men a spare horse, and every ten had a great tent of felt. Each squad of ten also had two spades, a pickaxe, a sickle, a saw, an ax, an awl, a hundred needles, eight and a half pounds of stout cord, an ox's hide, and a strong pan. Swiss Family Robinson was not better provided for from the mother's wrist bag.

With this equipment and such flocks as were necessary, the great roving warrior advanced against a score of enemies and conquered most of them, so that he was reputed to have had his chariots drawn by conquered kings, wearing as parts of their harness the jewels which once they wore as crown gems.

Then came the day when the conqueror returned by way of Derbent and northern Persia, over the route Germany seeks as the corridor to the East, and the long, long trail winding across barren steppes and hot desert, over snow mountains and through the torrid heat of the Ganges

and the Caspian depression, led Timur, the lame wanderer, back to his tomb in Samarkand. He never reached his capital alive; but his faithful followers, before they began fighting among themselves, carried the warrior's aged body back to the city where his friends lay buried.

The tomb of Timur, with its melon dome of turquoise blue, is in a quiet section of the city, at some distance from the smaller but lovelier mausolea of his loved ones. But in that cool and dark tomb, below the hot sun of Turkestan, the great Mongol leader and lame traveler lies buried with eight friends. Barbarian though he was, Timur loved deeply, and in death he is not alone.

ROMANCE GIVES WAY TO COMMERCE

Historical romance gives way to commerce when one leaves the polychrome-tiled mosques of Samarkand and slips across into the lovely valleys of fertile Ferghana, where Russia's cotton was grown before revolution spoiled the Moscow factories and the railways at the same time, so that mountains of cotton piled up in the yards at Kokand and Andijan. Last winter the people hungered, for the railway that took out cotton used to bring back food; but this year the food is growing once more in the cotton fields, and Turkestan will be better off when this winter's famine comes to parts of Russia.

Down into Ferghana and out toward the Pamirs the express from Petrograd, with its sleeping cars and spotless diners, used to run; and across the protecting mountains the British Indian officials watched with undisguised dismay this onward sweep of Tsardom. But Russia's imperial power has been divided into warring atoms, and it is a Teutonic power robbed of its dream of Bagdad that now looks out on the romantic cities of Merv, Bokhara, and Samarkand as stepping-stones to the tropical materials and population centers of India and the East.

The modern Hadji has found that he cannot ride to India on the bowed backs of Moslem worshippers. But prostrate hordes in the unenlightened cities of Bokhara and Samarkand beckon the drama-loving Kaiser on to seek aids among the



Although the American traveler in the picture is six feet five inches tall, he is overtopped by the enormous wheel of the native cart



A SQUARE IN KOKAND, FERGHANA

The owner of the high-wheeled Sart cart sits astride the horse, while his veiled wife or wives ride on the springless vehicle



Photograph by M. O. Williams

A BLIND FORTUNE-TELLER IN KOKAND

In the practice of his profession the soothsayer uses small pebbles to divine the fate of his patrons. To the left is a native cobbler at work.

countless worshipers in the Great Mosque at Delhi. It is a long, long trail. Timur traveled it to his tomb.

THE STORY OF BAKU

How Russia's collapse will affect the tribes of Turkestan cannot be foreseen. But the outstanding event in the whole Turanian field is the landing of the British at Baku—the city of fire and blood. Baku is more cosmopolitan than Bokhara, for Bokhara is only cosmopolitan in an

Asiatic sense, while Baku contains European influences and inhabitants as well.

From one end to the other, the Caucasus is a vast mine of copper, iron, tin, zinc, and other metals. In the lovely Alazan Valley of Kakhétia some of the world's finest wine is grown, and the North Caucasus is a granary where American agricultural machinery has reaped rich harvests; but at the east end of the Caucasus it is oil that has made modern history and made Baku a familiar



Photograph by M. O. Williams

A CAMEL DRIVER OF SAMARKAND AT THE END OF A PERFECT DAY

To the north of the land where Omar sang, the wine is perhaps just as red, and this son of the desert on his camel's back seems homeward bound after a plunge into metropolitan delights. Ruefully counting his remaining coins with unsteady hands, his turban in disarray on his dizzy head, he could have been lighted on his way by the twentieth century arc lamps at the corner of the fourteenth century Mosque of Bibi-Khannum in the background.



Scale: 320 miles to 1 inch

WHERE RUSSIA'S ORPHAN RACES RESIDE

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name among business men the world over.

Baku is well built in spots and is tremendously wealthy; but it lacks the distinction of a city that has grown gracefully. It savors of the *nouveaux riches* and the boom town still, at a time when it is already declining as an oil-production center, with Grozny and Maikop rising to wrest its laurels from the oil port on the Caspian.

The political situation at Baku has always been delicately balanced, and in 1905, in February and September, it was a scene of brutality and massacre, to which was added the terrible spectacle of the burning oil fields—a present-day possibility. Combining as it does the ancient and the modern, the Oriental and the Occidental, the Moslem and the Christian, the Turanian, the Armenian and the Slav, with liberal mixtures of Kazan Tatars, Lesghians, Georgians, and Persians, Baku is the key to the political situation in Transcaucasia. A strong hand is needed to control the situation, and the British are just the ones to supply the needed morale.

One can only appreciate the importance of the British landing, simultaneously with Allied successes on the western front, by understanding something of the psychology of the peoples occupying the region.

Expediency rather than principle actuates all of them with the exception of the Armenians. And expediency urges something different with Allied victories in France and a British force at Baku than it did last March, when I was in Baku, when the news of the great Allied defeat

on the western front was being given wide publicity by German agents, when the British Military Mission was removed from the train at Elizabetpol as they were trying to leave Tiflis, and when English officers in Baku were obeying the orders of the Tatars not to wear their military uniform.

To no one did the news of the British landing at Baku come with more surprise than to me, because I left there in April, and at that time German propaganda was alarmingly potent throughout Transcaucasia and north Persia. I was only one of about fifty Americans and British who were ordered to leave Tiflis March 23, and who saw the fighting in Baku from March 31 to April 2. But the whole outlook then was extremely pessimistic.

The very fact that even a small party of British are there now is significant, for had they come when I was there I doubt whether they would have been allowed to land.

JOINING THE CZECHO-SLOVAKS

From Baku we chartered a steamer to Astrakhan, and thus opened the Volga season, and in Astrakhan I left my American and English friends and went on into Russia alone, back over the route I had traveled nine months before, until I came to Samara and joined the Czecho-Slovak expeditionary force.

Every one who knows those true patriots respects them, and every American who knew them loved them as brothers in a world struggle to prevent Russia's subject peoples from becoming slaves of the Kaiser, as these varied races were once slaves of the Tsar.

WHAT THE WAR HAS DONE FOR BRITAIN

BY JUDSON C. WELLIVER

IT IS well-nigh two years since Mr. Sidney Brooks told in the NATIONAL GEOGRAPHIC MAGAZINE "What Great Britain Is Doing" in the war. His article was an eloquent plea to Americans to realize the part his country was playing in civilization's crisis; and there was need for it.

At that time I was in England. America's declaration of war was only a few weeks ahead, but its imminence was not generally realized either there or here. Probably, save when the two countries have been at war, and during some trying months of our Civil War era, there never has been a time when misunder-

standing was more acute, on both sides, between the English-speaking countries.

Even the best-informed Americans had but inadequate conception of the burden Britain was carrying. Prejudice was rife in this country, and was sedulously cultivated in many quarters and by divers interests. On the other hand, opinion in Britain was settling down to conviction that America would stand any humiliation, submit to any insult, rather than fight.

Britain had without hesitation entered a war to which the enemy had not challenged her, because she believed she was doing right. She wanted the moral support, and she sorely needed the material aid, that the great daughter State could bring. Why was America so slow to see and understand? Were we indeed as sordid and selfish as the Anglophobes among us were wont to charge Britain with being? Were we merely a race of profiteers?

BRITAIN'S MORAL LEADERSHIP

Today, with our millions of soldiers and billions of wealth fighting alongside Britain's, we may remind ourselves of those trying months, and the reminder must make us grateful that things are as they are. It would be alike futile and foolish to ask how long our aloofness might have continued without creating incurable distrust between the two Anglo-Saxon nations and bringing disaster to the world.

For that she furnished the moral leadership, the instant courage, the true perception of underlying issues, Britain is entitled to recognition as the force which made this war, from its first gun, essentially a contest between systems rather than States; between ideals, not alliances; between good morals and bad morals.

It was the confidence of the nations, small and great, near and far, in this moral leadership of Britain that saved the world. That confidence nerved Belgium to bare her breast to the first blow, to meet the first shock of invasion with all she could summon, and to stay it for a little time while the forces of civilization could make their initial rally. That confidence brought Portugal, oldest of England's allies, into the field.

It brought Japan, newest and most powerful of Britain's allies, with shining armor and well-tried sword, into the arena as sentinel of the eastern gateways, guardian over the peace of the East, too long and insidiously tempted by the plotters of Berlin.

It brought the colonies and dominions of the world-flung Empire straightway to "shoulder arms" at the foot of Britain's democratic throne, bearing their yet unsought pledges of loyalty and devotion. The princes of India, the Boers of Africa, the men of Canada and Australia, the Maoris of New Zealand, trooped unbidden to their places in the ranks.

Yet the wealth and resources of the Empire—in men, money, and industry—were not the greatest of Britain's contributions. More potent than these was the fund of moral credit enlisted in the cause on the day when Britain gave it her endorsement. The scales of prejudice fell from a thousand million eyes in that hour when men envisaged the contrast between autocracy, prepared, and democracy, inspired.

BRITAIN SAVED HER DEMOCRACY

What has the war done *in Britain, to Britain, for Britain, and through Britain, for the world?*

First of all, it has saved Britain for democracy; it has reincarnated, in a new Britain, the spirit of democracy, the love of freedom, the devotion to fair play and substantial justice that for a thousand years have made Britain the leader of civilization. Other peoples may have at times displayed equal zeal in behalf of human rights and equality, but what one has been able to temper and direct these fine aspirations as they have been directed by the genius of the British race for political and institutional construction?

Before the war the world heard much about British decadence. Your true Britisher has an almost morbid tendency to misgiving about the state of the national soul. He is pretty positive, when affairs wear a favorable aspect, that there is something radically wrong just underneath; and when they look thoroughly bad, that they are really much worse.

The Britisher's passion for self-deprecation is only equaled by the German's



THE FATHER OF SIX OFFICERS IN THE BRITISH ARMY GIVEN THE FREEDOM OF HIS
NATIVE CITY

The recipient of this unique honor, bestowed by the city of Peterborough, England, was Dr. Thomas James Walker, on the occasion of his 80th birthday. He has 13 children, and six of his nine sons hold commissions in the British army. Dr. Walker is seen on the mayor's right. In America, Governor and Mrs. Manning, of South Carolina, offer a striking analogy to this Britisher's contribution to the war; they have also given six sons to the service of their country.

for self-glorification. It is as hard for an Englishman to discern anything quite right in England as for a German to descry anything at all wrong in Germany. The German plumed himself on his ability year by year to increase his sales in England; but it never occurred to the Englishman to congratulate himself on the fact that, year by year, he somehow had more money with which to buy them. If a group of amiable spirits sat over their beer in a Berlin café till after midnight and their converse took on a slightly alcoholic fervor, the German capital was forthwith described as developing a "night life," becoming tremendously gay, and threatening to outshine Paris in the attributes of true cosmopolitanism.

But if the like happened in London, Britain shook its solemn head, decided that the national morals were going hopelessly bad, and regretfully realized that the social fabric was on the point of disintegration. The rest of the world fell into the easy habit of accepting the self-imposed verdict in each case, and ultimately indulged a good deal of unwarranted admiration for the amazing progress of Germany and unjustified worry about the confessed degeneracy of England.

AN AGE-OLD CONTEST

In a thousand other ways the two countries were as unlike as in this lack of capacity for accurate self-appraisal. There was plenty of room in the sun for both. The world needed all of the best that both could give. They ought never even to have imagined that they were sufficiently alike to be capable of intense rivalry.

And they never would have developed such an obsession but for the political institutions which made it possible for Germany to be brought under the control of a wicked, selfish, designing, criminal dynastic policy of world conquest. The contest between autocracy and democracy has been going on through all the ages. Because England and Germany were on the whole the foremost European representatives of the antagonistic systems, clash between them was inevitable.

Two short centuries had seen European

civilization spread its sway over most of the world. Everywhere this outreaching carried the conflict. The world could not exist half slave and half free.

Under the spell of German egomania it was falling into a disposition to overestimate certain undeniable advantages of close-knit, strong organization, and to exaggerate the equally obvious disadvantages of that laxity and carelessness which tend to propagate when democracy rules and times are good.

At the price of those sophs which autocratic Germany tossed to the proletarian Cerberus, the world might have been bribed to exchange freedom for a mess of welfare pottage. It is good that the contest came as early as it did.

BRITAIN SPIRITUALIZED BY THE WAR

Discussing war and after-war problems in a London club one day, an American observed:

"This war will be followed by a revolution." An Englishman in the party quietly retorted:

"This war *is* a revolution. Just look around you."

He was right. It is trite, but it is true, that Britain has been spiritualized by the war. The British democracy is no longer merely a political and institutional democracy. It is a human democracy. The social caste system and the pound sterling have been overthrown as rulers. Truth to tell, England was never so caste-bound or money-ridden as popular belief, there and elsewhere, pictured it. But it loved its traditions, and this was among the most sacred.

The ordeal of war has made Britain know that humanity is the most precious thing in the world. No man could give more than his life; no man could give anything comparable to his life; and when all men willingly offered that last sacrifice, they could only offer it for a common ideal which must be the highest possible ideal—for humanity.

The rich man discovered that his wealth was dross, the titled person that his title was tinsel; the great common denominator among them all became human life and human souls.

Neither Magna Charta nor the old English revolution meant any such stir-

ring in the depths of the British soul as this has meant, for this has come in a time and to a people alive with social consciousness.

Britain, giving its all for freedom, has taken time to ask what it means by freedom, and has adopted some new definitions. Freedom is not again to mean the liberty of the few to live in palaces and the many to live in hovels; of the many to pay with their toil for what the few consume at their ease. No, this is not Bolshevism. An ignorant peasantry might translate it into Bolshevism, but the English nation is translating it into terms of social and industrial democracy.

If this be socialism, make the most of it. The Englishman, even the Englishman who a little time ago would have been called a Tory (though today he is apt to be the most liberal of his race), prefers to call it socialization. His notions about it are intensely practical. For example:

HOW BRITAIN SOLVED THE MILK SHORTAGE

Before the war had even approached its climax, Britain discovered that it faced a shortage, among other things, of milk. The government guaranteed very high prices to induce production; but the sacrifice of herds, plowing up of grass lands, and deficiency of labor rendered stimulative efforts futile. There was not enough milk to go round in the old, easy way, and administration stepped in to insure first against profiteering and second that those who most needed it should have their share of the milk.

Observe the results. Some months ago the British Medical Association discussed some remarkable vital statistics. It found that for the last preceding year the death rate among infants under five years old had been about one-half the rate in pre-war times. It was a phenomenon beyond the comprehension of anything but common sense. The medical authorities applied that test and issued their verdict.

For the first time in the modern history of Britain there had been milk enough for all the babies, and good milk.

But if the adult patron of a public eating-house buys and drinks a glass of milk as a beverage, he is liable to a fine of five

pounds, and the proprietor subjects himself to a like penalty.

If anybody imagines that hereafter Britain will return to the customs of "the good old days," when for want of milk twice as many British babies enjoyed the privilege of dying, he is far from understanding what is going on in the English public mind today.

GOUT AND HUNGER ALIKE BANISHED IN BRITAIN

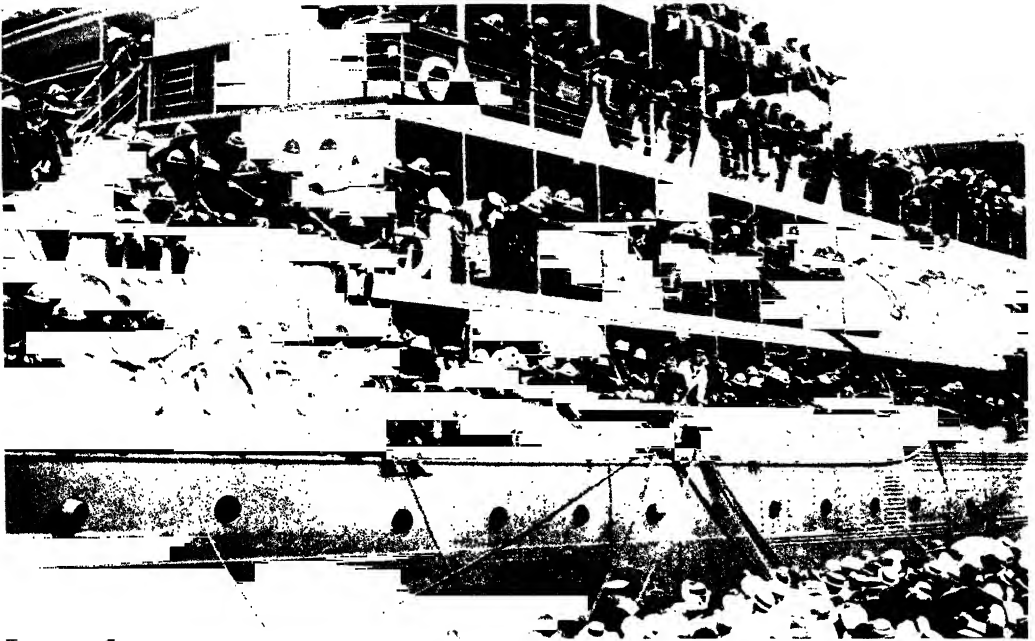
Britain, sending its merchant fleet through all the danger zones, transporting soldiers, munitions, supplies, keeping the blood circulating in the arteries of the commercial world, has lived month after month fairly on the brink of starvation; yet rationing has been for the greater part voluntary, accomplished through the cooperation of a willing public with a patient food administration.

Never in Britain's history have so many people been amply fed; never have so few been hungry. Never, it may be added, has the population enjoyed so nearly unanimous immunity from those aristocratic digestive ailments which constitute the penalty of eating not wisely but too well. A search warrant would hardly find a dozen respectable cases of gout in the entire Kingdom.

Armies of people in Britain are for the first time wearing their old clothes, and glad to do it; other armies are for the first time wearing good clothes, and equally pleased. We have heard quite too much about the extravagances of the munitionettes who buy Astrakhan furs and impossible jewelry. After all, people associate more, and more intimately, with their clothes than with any other incident of life.

To be decently clad is the first essential to self-respect. Other and more exalted tastes are presently induced. The factory girl who begins with dressing like a lady presently finds herself disposed to *be* a lady.

And the community is making arrangements accordingly. In recognition of her services in shops and factories, in offices and on the farm, manufacturing explosives at Gretna and doing the work of tens of thousands of men just behind the firing lines in France, woman has been



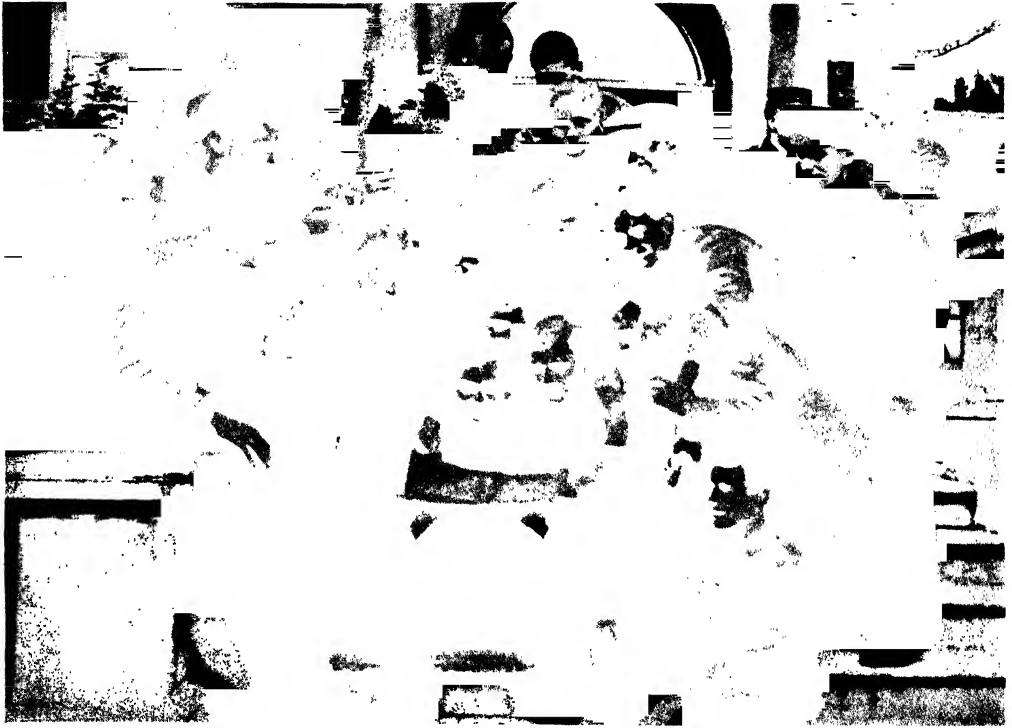
A LARGE BRITISH TROOPSHIP IN DURBAN HARBOR



Photographs from W. B. Wilson

BRITISH IMPERIAL TROOPS IN THE STREETS OF DURBAN, SOUTH AFRICA

Sir Eric Geddes, First Lord of the British Admiralty, is sponsor for the statement that since the beginning of the conflict the British navy has escorted overseas to and from all theaters of war some 16,000,000 men belonging to the armies of the British Empire, and the loss has been one-thousandth part of a man per hundred carried, from all causes—marine risks or enemy action.



Photograph by Paul Thompson

GOOD NEWS FROM THE FRONT, TO WHICH THEY MAY NOT RETURN

These wounded soldiers on the steps of a London hospital have recovered sufficiently to be sent to a convalescent home, for which they are to leave in a few days

given the ballot. The monarchic democracy of England has reached the goal of universal suffrage several laps ahead of America.

TWO HISTORIC SESSIONS OF THE HOUSE OF COMMONS

The organization—it can hardly be called a system—for public education in Britain is notoriously inadequate. Many people knew that before the war, and the war's shock aroused the nation to action. I have sat through two absorbingly interesting sessions of the House of Commons. One was on a day of political crisis, when some innocent souls thought Mr. Lloyd-George was in danger of being driven from power, and when, with the eyes of the world focused on Westminster, with the benches and galleries of the Commons packed, the Prime Minister in a great speech drove his enemies from the field in utter rout. The other was on the day when Mr. Fisher, Minister for

Education, presented and explained in much detail an ambitious but dry-as-dust program for educational reforms.

The one occasion saw a tremendously dramatic political spectacle; the other, a three hours' explanation of a complex piece of constructive legislation. Yet I am not sure that Mr. Lloyd-George's was the greater triumph. To a House of Commons that had already voted away something like a quarter of the national wealth in war appropriations, Mr. Fisher calmly made his demand for \$75,000,000 to inaugurate a complete new educational organization—and was enthusiastically applauded!

ONE OF THE MOST COMPLETE EDUCATIONAL SCHEMES EVER DEVISED

That applause was the testimony that Britain intended to help the munition girl who aspires to *be* more like a lady; to help the farm boy who, while digging trenches in Flanders, has learned to see



Photograph from American Red Cross

A GROUP OF WOUNDED AMERICAN SOLDIERS WHO HAVE BEEN SENT TO ENGLAND
TO REGAIN THEIR HEALTH AND STRENGTH

The scene is the lawn of Dartford Hospital, near London. Mrs. Walter Hines Page, wife of the former American Ambassador, is seen dispensing flowers and cheerfulness among the boys who have been sent from the front to recuperate in England.

life with a wider vision than when plowing furrows in Kent.

Like every other British reform, the educational act carefully utilizes the long-laid foundations, avoids unnecessary shock to tradition, saves and builds upon whatever has been found good. It has since become a law, and for its coördination of all grades from kindergarten to university, for its plans to make education compulsory, practical, and cultural; for its guarantees of the full measure of educational opportunity that every type of adolescent mind may justify, it seems fairly to justify the verdict of some educators, that it is the most complete and satisfactory educational scheme ever devised for any nation.

If space would permit, a digest of this measure, which combines a scheme of universal education with new and necessary restrictions on child labor, would

give an excellent idea of how the British have managed, while meeting the demands showered on them by a warring world, to find time for constructive reforms.

Here in America a few people have just begun to study the amazing data about illiteracy, our 11,000,000 alien residents, use of foreign languages in great communities, and the physical degeneracy of great classes, which have been made available through the working of the universal military service act. Britain has studied its corresponding data, and has taken measures to end disgraceful conditions.

Foreseeing the myriad problems of after the war, they have set up in Britain a Ministry of Reconstruction, headed by Dr. Charles Addison, which has produced a great mass of illuminating studies in existing conditions, with plans for their



Photograph by Paul Thompson

ON PARADE WITH THEIR SCHOOL BOOKS

Officers of the Edinburgh Officers' Training Camp, from Highland regiments, on parade with their school books. The young officers have 17 different books on military work to master in the course of each month's training.



Photograph by Paul Thompson

BRITISH SOLDIERS FROM THE FRONT ON CHRISTMAS LEAVE

"Some of the lucky ones." The arrival at Waterloo station of soldiers loaded with presents and bunches of holly and mistletoe.



IN PEACE TIMES THEY MADE ARTIFICIAL FLOWERS; NOW THEY ARE FRUIT HARVESTERS

And judging from their jovial expressions, the useful occupation has its own reward in high spirits and excellent health as well as in the satisfaction of giving their best efforts to their country. There are nearly 5,000,000 women at work in England today, and of these a million and a half have directly replaced men.

reform. It is calculated that 1,000,000 new houses must be provided as fast as possible after the war. Very well; municipalities will build them, using their own credit, backed by the national government's. The government has set a splendid example of how to improve housing and sanitary conditions wherever it has built for war workers.

Out of the United Kingdom alone, with its 46,000,000 population, have been drawn 6,000,000 men for military and naval service; 1,250,000 have come from the dominions and colonies and 1,150,000 more from India.

A MILLION BRITISH LIVES GIVEN TO THE CAUSE

A million British lives, it was recently stated, have been given to the cause; yet this sacrifice will only slightly affect the Kingdom's population, because improved living conditions of the civil population have effected so great a compensatory saving of life at home.

Only recently has the birth rate been appreciably depressed, while the saving of infant and adult lives has been astonishing. With all its boasted efficiency and talent for organization, I venture to say that Germany has been outstripped in these regards by war-time Britain.

Alongside the military mobilization that produced the gigantic British army and approximately doubled the navy has gone a civil reorganization that has made it possible not only to create and continuously expand the war industries, but to keep alive the world commerce by which the nation lives. In bulk the exports of Britain have indeed greatly decreased; in value they have been amazingly maintained; which means support of British credit throughout the world.

And not only have the exports maintained British credit and upheld the pound sterling; they have been so directed and handled as to lay a foundation for British trade after the war, whereon will rise a structure that will be more than ever the despair of German competition.

Although America has gathered in half the world's monetary gold, we have not borne the sole responsibility of directing the war's finances. In truth, we have

loaned money to the world, while Britain has both loaned money to it and—far more important—financed it. British credit and world-reaching banking organization have accomplished amazing results with bills of lading and commercial acceptances that we are just beginning to realize.

CARRYING HUMANITY'S BURDEN

On the afternoon of the coldest day of the bitter winter of 1916-17 I landed in London, after shivering through the ride from Liverpool. A robust Jehuess hoisted our bags atop her taxi and drove us to a hotel where we got quarters. That night we were refused coal for the grate in our room; there was no coal save for invalids.

But that same week a convoy of vessels laden to the last pound with coal for suffering Norway had cleared from a British port and been safely escorted by British destroyers and cruisers to its northern destination. That awful winter Britain did without coal in order that Scandinavia, France, and Italy might have it. Britain—that is, except the munition works; they must have their allotment, because the armies of Britain and her allies must be equipped.

All the way through, it has been for Britain to carry burdens, supply deficiencies, provide means, perform the tasks that were neither spectacular nor heroic. The British navy, working almost in secret, has been the backbone of the Entente cause. Without it the war would have ended, as Germany planned, before the close of 1914. Germany was throttled from the beginning by a fleet whose very location, in the far northern Orkneys, was not known to the world till months after Germany was sealed tight.

It was for Britain to send the heroic first army that died in the first hundred days—but saved the Channel coast. England must needs provide the hopeless expedition to relieve Antwerp—a maneuver that failed in its immediate purpose, but saved Belgium to the Entente.

Britain bore the horror of Gallipoli without wincing. When the hour came for the tables to turn, when glory and victory were at length among the possi-



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A BATTALION OF W. A. A. C.'S ENJOYING A REST ON THE GYMNASIUM GROUNDS AT ALDERSHOT. They are awaiting the arrival of King George and Queen Mary. His Majesty on this occasion is to decorate heroes of the British army and navy.

bilities, Britain, in the interest of unity and efficiency, placed her army under a French commander-in-chief and, never afterward questioned his management of the struggle.

NOT A MILITARY COUNTRY

Britain was not a military country. Its facilities for producing the necessities of war were hopelessly inadequate to such a contest; they had to be created; and while handling a sea campaign that might well have been esteemed her full share, providing ships and money and supplies, she built the organization for producing munitions on a scale never attempted before.

Even now, how many people know that the Vickers-Maxim establishments in England employ more people than all the Krupp works? Who realizes what it means for the British navy and transport service to have transported overseas 16,000,000 soldiers, first and last, with losses almost negligible?

Take the air service. It required the creation, absolutely, of an immense industry—so big, in fact, that in its ramifications it was said a year ago to be the greatest single war industry in the country. It requires 30,000 aeroplanes a year to keep 1,000 at work constantly on the fighting lines, so great is the wastage. England has been accomplishing more than this; unostentatiously but effectively, she shouldered this along with the other burdens.

And, doing all this, Britain still had industrial resources that enabled her to aid America in providing hundreds of thousands of uniforms for our soldiers before our own sources of supply and machinery of production were fully organized.

There is an incident which I have always thought peculiarly illustrates the sort of services Britain has been rendering all along. During 1917 tonnage became so scarce that new restrictions were put on imports and oranges were barred. They came mainly from Spain, and a huge uproar was raised in that country. At length—so the story went in London at the time—Spain delivered an ultimatum: unless her oranges were taken, she would not let her iron ore go!

Italy and France must have iron ore from Spain or the war might as well be stopped. So Britain quietly lifted the embargo on oranges, and somehow scraped up the shipping to bring the oranges, and also to deliver the ore to France and Italy.

WHAT BRITISH WOMEN HAVE DONE

Everybody knows how British women have taken the places of the men in industry, but nobody who has not seen can understand. At Sheffield we saw a gun being turned into shape, so big that we were pledged not to publish its caliber lest the enemy learn too much, and women were operating the giant lathe.

At Gretna Green were near 40,000 people in one plant making high explosives, and about seven-eighths of them were women and girls.

On the Clyde we found mile after mile of shipways lining that pathetically little stream that is the headquarters of the world's shipbuilding industry, and women and men worked side by side on the scaffolds, at bolting and riveting, forging and casting, as if they had always done it.

In a great foundry where casings for the big naval shells were cast, we found the floor filled with women in overalls and oil-cloth caps, doing practically all the work.

At Birmingham, where the cartridges for rifles and machine-guns are made by millions, women were operating the machines, with hardly a man in sight. Outside, at the shipping warehouses, we saw the boxes with labels stenciled on them, ready for shipment. They were going to France, Italy, Saloniki, Mesopotamia, South Africa, Russia, the South Seas—everywhere that Britain and the allies were fighting.

What about these women, now habited to their place in industry, to the self-respecting sensation of doing their part in the world's work, to earning good wages and being independent? Will they willingly give up their places to the men after the war? The question is asked constantly. I am going to attempt an answer, based on what I have learned of the British national ambition and the British woman's conception of her relation to it.

Britain has the idea that this world has seen the last of over-production. It has become convinced that the real difficulty that gets things out of economic kelter is under-consumption. So it proposes that the ladies shall keep on working, the men shall join them, and arrangements shall be made for such a distribution of their joint product that there will be no over-production!

THE LESSON OF CONSUMPTION

The greatest lesson the British people have learned from the war is this of consumption. They have acquired the habit of being steadily employed at good wages. They have learned how to spend their money carefully, sanely, thriftily. They have learned to save; the bond-selling campaigns have taught that. Thrift came from ebriety, serious-mindedness, and the necessity of stretching all supplies to make them go round. Money ceased to mean so much when one, though he had a bushel of bank notes, wasn't allowed to spend more than "one-and-thrappence" for afterno n tea, with other meals in proportion.

London is full of great houses vacant. Income taxes have done part of it, the fuel controller much. Who wants a 40-room house when the coal administration allows only fuel to heat seven rooms, and when servants cannot be had at any wage? So the great places stand empty, while there is a scarcity of middle-class houses; palaces are too expensive, hovels no longer good enough.

The leveling-up-and-down process is actually happening, and England as a whole likes it. Lincoln said, "God must have loved the common people, for he made so many of them." As for England, the war filled them with the conviction that they are *the* people, and the government gave them all—men and women—the ballot.

THE FUTURE OF THE HOUSE OF LORDS

The minority that doesn't like the new order will have no power of veto. The House of Lords is far advanced on the way to a reorganization that will make it almost another United States Senate—elective and without hereditary right to seats. A parliamentary commission has reported the plan, and it is nearer adop-

tion than woman suffrage seemed on the day war broke out.

After that will come adaptation of the federal system to the kingdom. Premonitory rumblings in public thought are telling of it. There will be legislatures, like those of our American States, for Scotland, Wales, metropolitan London; probably two for Ireland; one and perhaps more for England outside London; and all these States will be represented in the Westminster Parliamt as ours are in the Congress at Washington.

Perhaps the Dominions will at length send their delegates there, too; if not, some sort of truly imperial parliament will make place for them and for closer political union of members that the war has drawn into a new spiritual community.

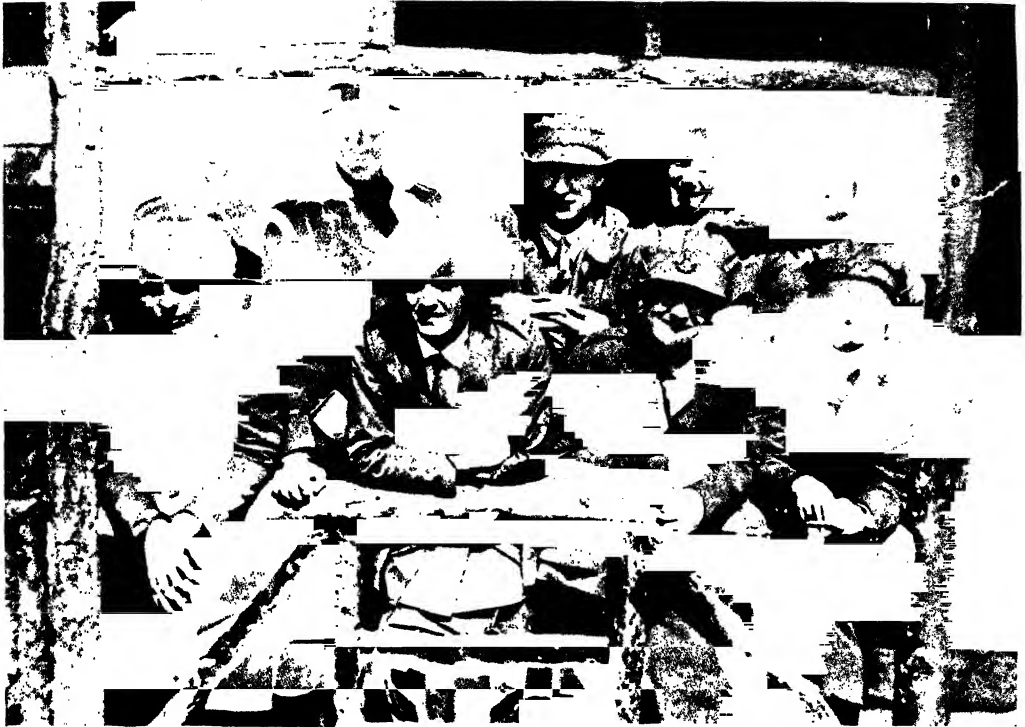
A BETTER RACE OF BRITISHERS

A better race of British men and women will come out of this war. Notwithstanding the physical misfortune to the race of having so many of its best men killed or maimed, Britain will gain vastly more than it will lose through the training, discipline, and physical improvement of its manhood; through teaching reliance, self-respect, realities, true values. The world will gain greatly by a renaissance in Britain of the spirit that made Britishers its pioneers, colonizers, civilizers, administrators. And that renaissance has been achieved.

There will be a movement of Englishmen to the distant quarters of the world; but enough will remain at home to build the motherland to a greater and better position.

Misgivings about Britain sinking to second rate among the powers are at any rate some centuries premature. The tight little island will continue "the powerhouse of the line." It will be developed as never before. It has found itself anew. There is today a perfect mania for efficiency, quantity production, elimination of lost motion, suppression of waste.

One thing that Britain has done during the war will have an effect on the national life not yet to be measured, but certainly far-reaching. That is the rehabilitation of agriculture. In 1918, we



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MOTOR DRIVERS OF THE BRITISH WOMEN'S LEGION

The organization to which these war workers belong is similar to the American Women's Motor Corps. They are attached to the Canadian Forestry Corps and are stationed at Windsor Park. Their log huts have been built by the women foresters.

are told, the country has produced food-stuffs enough to feed it for 40 of the 52 weeks. Nothing like that has been done for half a century. It is one of many instances of accomplishing the impossible. Sacred parks and beloved areas of grass lands have been sacrificed; but the food was produced, because there were no ships in which to import it.

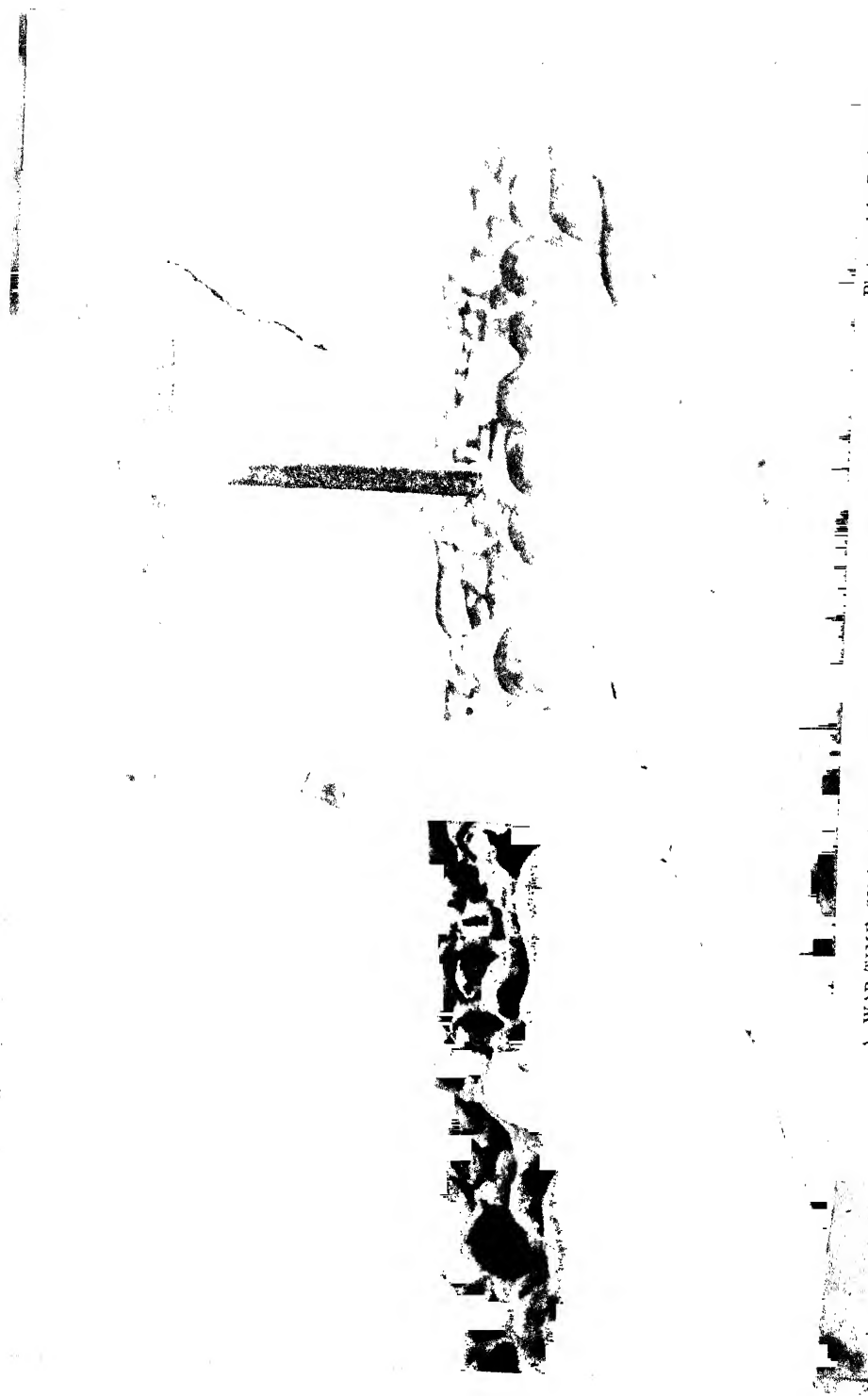
Not again will Britain permit itself to be dependent for its daily bread on the uncertainties of importation. Agriculture is become a chief object of national solicitude, and will remain so. The 1918 achievement would not have been so striking in normal conditions as to labor, animals, implements, fertilization, and the like; but in the circumstances of its accomplishment it is one of the war's wonders.

Britain has learned anew what a great agricultural industry means; has learned that the land is for use first, ornament

afterward. Taxes on incomes, rates on the broad acres of manorial estates, are solving the land question. The great holdings are being disintegrated at a rate of which Americans have little conception.

Single proprietors have sold at auction hundreds of farms. In one case a nobleman specified that tenants should have preference, and practically all his holdings went to them. Some of the lands had been in his family 600 years, and some of the farms had been held by the same families of tenants for 300; but never had there been, till this sale, the thought of possible ownership.

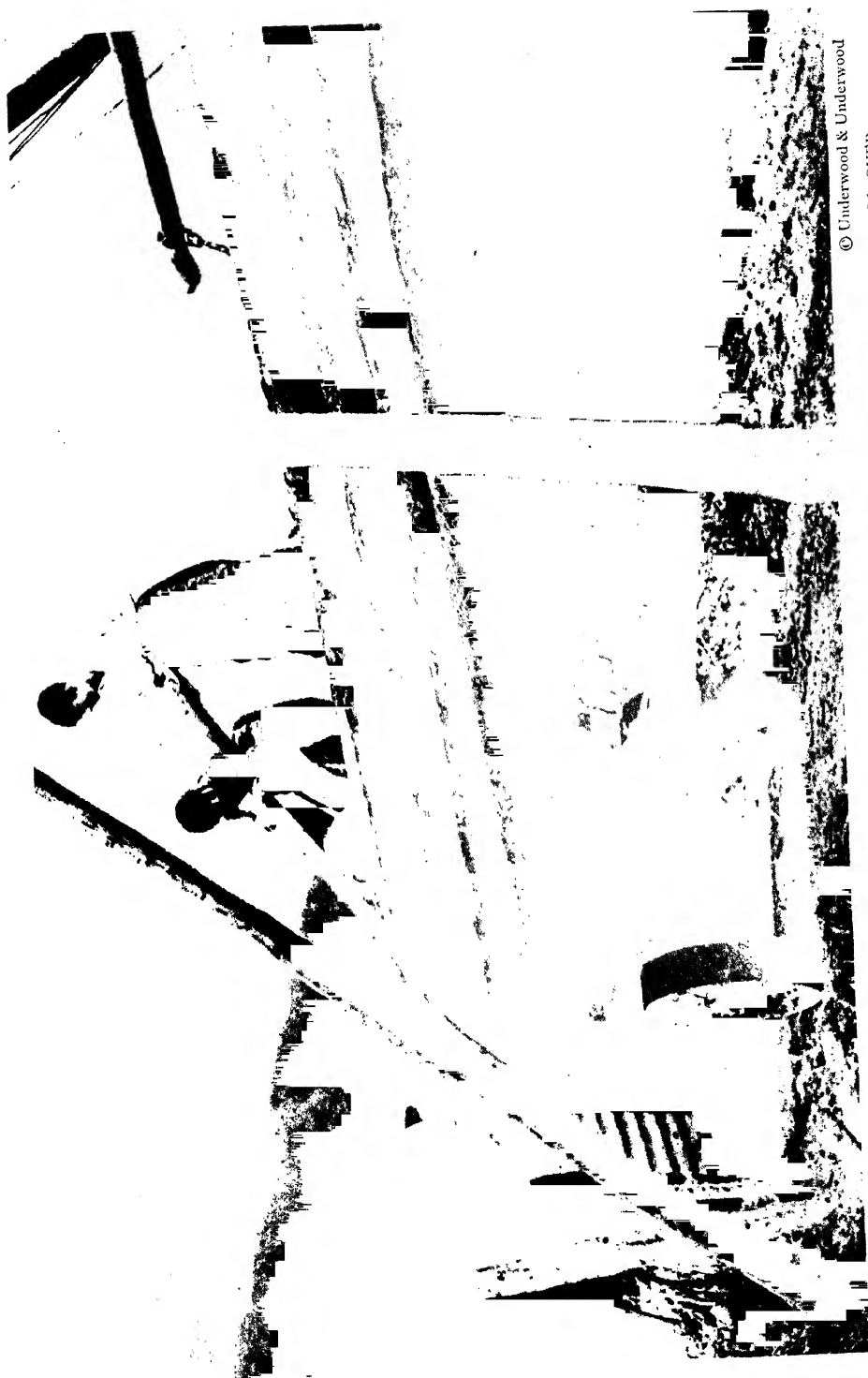
If this disintegration of land holdings does not proceed fast enough to satisfy the public desire, it will be accelerated by application of further taxation measures which the people have in mind. Mr. Lloyd-George, apropos certain budgetary reforms that when enacted, did not es-



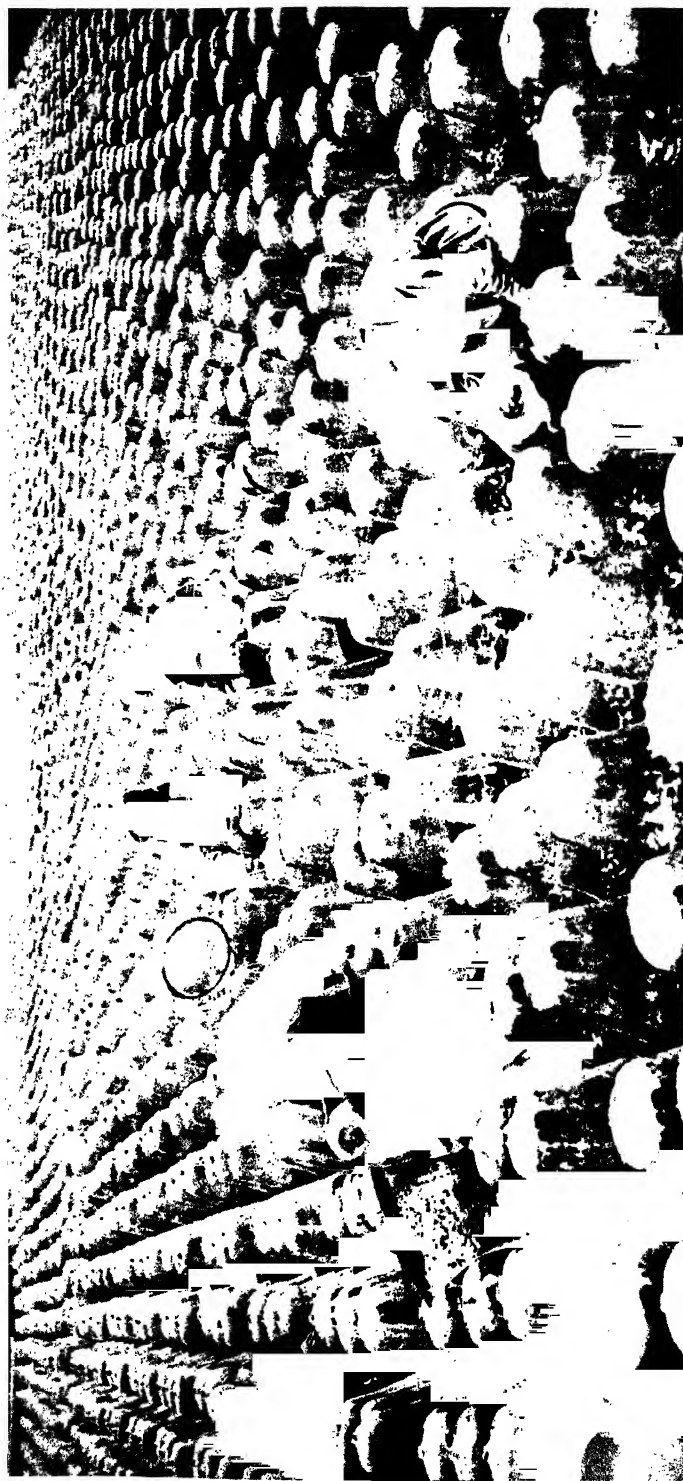
Photograph by Paul Thompson

A WAR-TIME SHEPHERDESS IN THE PLEASANT HILLS OF SURREY

Britain has learned anew what a great agricultural industry means; has learned that the land is for use first, ornament afterward. Taxes on incomes, rates on the broad acres of manorial estates, are solving the land question."



THE LUMBERJACK YIELDS HIS OCCUPATION TO THE LUMBERJANE IN BRITAIN UNTIL THE WAR IS OVER
 These sturdy young women have not only learned to wield the ax and the cross-cut saw, but they load the tractors and fasten the logs in place with heavy chains



© Underwood & Underwood

UNDER 250,000 IMMENSE GLASS BELLS THIS GROUP OF WOMEN WAR WORKERS IS HELPING TO RAISE FOOD FOR GREAT BRITAIN

The scene is the Purlhill Intensive Gardens, at Horsham, where, in compliance with the British Government's instructions, every available inch of space is being utilized to supply the British troops and civilian population with food. Under this sea of bells a quarter of a million heads of lettuce are cultivated.

pecially endear him to the "best people," did much to popularize the works of his American namesake, Henry George; and these two Georges will have a good deal to do with directing British policy for some time after the war.

But, though the British may become substantially self-supporting as to agriculture, they will, of course, remain primarily an industrial, commercial, maritime, and financial people. With all the drafts that war has made on its manpower, England has actually increased its iron and steel production.

SHIPBUILDING AND WORLD COMMERCE

As to ship-building and its relation to world commerce hereafter, those kindly folk who fear the loss of British sea supremacy would do well to see the Clyde, the Tyne, and the Belfast shipbuilding districts, and to learn about the new national shipyards on Bristol Channel. After nearly four years of war, in which it had borne the lion's share of shipping losses, the British merchant marine was still able, during the critical weeks of last spring and summer, to transport 60 per cent of the first American army of two million soldiers sent across the Atlantic.

The country's industrial plant has been expanded during the war beyond all popular knowledge. Moreover, the expansion has been directed by an unwavering purpose to make the new establishments easily adaptable to peace production.

The nitro-cellulose plant at Gretna Green covers an area of nine miles by five. It requires a hundred miles of plant railways. It has been built entirely since the war began, and, as it produces noth-

ing but high explosives, might be reasonably regarded as one industry whose product would hardly find a market in peace times.

Yet its management assured me there was every prospect that the demand for explosives in engineering work plus the market for celluloid specialties in endless variety would keep the establishment busy with merely some rather easy adaptations of its products.

A RECONSTRUCTED COMMERCIAL WORLD

The new Ministry of Reconstruction, the Board of Trade, foreign trading houses, bankers, consular service, have coöperated throughout the world to strengthen Britain's hold on foreign markets.

In anticipation of changed conditions after peace returns, of increased credit requirements to restock the warehouses and restore the public utilities of the world, a series of great banking consolidations has taken place in England in the last year. They are part of the economic mobilization for the competitive struggle after the war.

The alien property authorities of Kingdom and Empire have been quietly tracing out and untying the bonds by which intriguing German interests had established hold on many industries, markets, financial and commercial opportunities. The German salesman who goes out to offer his wares hereafter will find himself dealing with a very much reconstructed commercial world. Whatever he may have thought of British competition prior to August, 1914, he will find it the real thing along about August, 1920.

HOW CANADA WENT TO THE FRONT

BY HON. T. B. MACAULAY, OF MONTREAL.

THE work which the United States has undertaken in connection with the war is so vast, and the spirit in which it is being carried out is so magnificent and so enthusiastic, that what we Canadians have accomplished must of necessity appear rather small in comparison.

You of the United States are to have the honor and glory of being to a large extent the deciding factor in bringing this terrible war to a happy conclusion, and of turning what might possibly have been a drawn battle into a glorious victory. The efforts which you are putting forth are the delight and admiration of your

Allies and the dismay of Germany and the Kaiser.

We Canadians are delighted at the manner in which you have taken up your task.

The story of Chateau Thierry has stirred all our hearts.

The help you have given far exceeds the men and munitions you have furnished, great and valuable though they are, for you put new heart and vigor and sureness of victory into the French and British troops, who had begun to be a little war-weary and stale after four years of struggle.

RALLYING TO THE MOTHER COUNTRY

After four years of hostilities, it is difficult to place ourselves in thought back to the early days, when the great German military machine, which had been preparing for forty years, was crashing through Belgium and northern France.

The sky was clouded and the outlook dark; the brave men of France and Britain were being overwhelmed by superior numbers; we had few guns to answer the German artillery, and ammunition was so short that many of our guns were restricted to five rounds a day—it was at that time and under those circumstances that Canada had the privilege, on account of our British connection, of getting into the fray, and we all feel a joy and pride that we were able to do something, even though but little, to help stay the Hun in those gloomy days.

At the beginning of August, 1914, we were not only unprepared for war, but had so long breathed the atmosphere of peace, that we were unable at first to realize the importance of what had happened and the magnitude of the crisis into which the world had been plunged.

CANADA SAW HER DUTY AS A PRIVILEGE

As to our duty, there was no doubt. From the Atlantic to the Pacific we felt that it was both our duty and our privilege to put our whole weight into the struggle, side by side with the mother country. But what were we able to do? In what way could we help?

As for military organization, we had

practically none. We had 60,000 militia, but they had had little training and had taken their duties lightly. Bernhardt had said that in the event of a European war Britain's dominions and colonies could be completely ignored. As for financial help, we had been a borrowing country, and how could we begin to lend?

But our national spirit rose to the needs of the occasion. Our people quietly determined to do their best. The call went out for 25,000 volunteers to go overseas, and within a few months we had sent off not 25,000, but 33,000. Within two months of the outbreak of war some of our troops who had been hardened in South Africa were fighting in France, and within seven months even our green troops were on the field engaged in a life-and-death struggle with the Huns—and holding them!

Further detachments were despatched as quickly as they could be raised and drilled, until we now have a total of over 550,000 enlistments, and will soon have 600,000, and of these about 450,000 are already in Europe. Every month is adding to the number. We have promised that we will send over not less than 500,000, and we propose to keep that promise.

CANADA'S CONTRIBUTION OF MEN AND HER CASUALTIES

Our enlistments, including those secured under the Military Service Act, already number about one in thirteen of our population. In the same proportion the figures for the United States would be around 8,000,000, which is about the number you are preparing to raise.

We began with voluntary enlistments, but, just as in the mother country, we had to come ultimately to the draft system. You have profited by our experience, and have very wisely adopted the draft system from the beginning. We fully agree with you that this is the only right and fair method, and that it is besides vastly more efficient and more economical.

And how about the casualties? In the early days of the war, when we were short of artillery, and even of rifles, and were unprepared for poison gas, we suf-



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IN THE FLAX FIELDS OF FAIR ENGLAND

Who would not pay a premium for linen woven from the flax gathered by such capable hands
and with such a winning smile!



© Underwood & Underwood

BRITISH WAR WORKERS WEARING GAS MASKS WHILE LOADING SHELLS WITH POISONOUS CHEMICALS

The gas shell is deadly even before it is fired from a gun, and these industrious young women are required to wear gas masks while engaged in the hazardous occupation of filling the projectiles. Overalls and caps are also part of the equipment, and for the time being feminine finery is not only forsaken, but forgotten.

ferred heavily. Up to June 30 of this year we had:

Killed in action.....	27,040
Died of wounds.....	9,280
Died of disease.....	2,257
Presumed dead	4,342
Missing—probably dead	384
Total deaths.....	43,303

In other words, of the total number who had gone overseas up to June 30 last, 11.3 per cent were already dead.

In addition there were—

Wounded	113,007
Prisoners	2,774
	115,781

so that in addition to the deaths, 30.2 per cent had been wounded or made prisoners. It is a comfort to know that between 30,000 and 40,000 of the wounded were ultimately able to return to the firing line.

The total casualties were 41.5 per cent of the number who had gone overseas. But even this does not tell the full story. Most of those who had but recently gone across had, of course, not been long exposed, and the casualties were chiefly among those who had gone over early. Among them the casualties were tremendous. Those noble fellows paid a terrible price, and I can assure you that among them were many who were the very cream of the Canadian nation.*

WHEN GERMANY LAUNCHED HER FIRST GAS ATTACK

When I think of those early days, my mind goes back to April and May, 1915, to the second battle of Ypres. It was then that the Germans made their drive for Calais and the Channel ports.

Alongside our Canadian boys were French troops from Morocco, and against them the Germans first used their devilish gas. The Moroccans broke and fled, and small wonder. Nothing remained but our Canadian boys between the Germans and Calais, and they were many times outnumbered by troops that were supported by efficient artillery.

* According to official figures issued from Ottawa on November 12, Canadian casualties, up to eleven days before the signing of the armistice, totaled 34,877 killed in action; 15,457 dead of wounds or disease; 152,779 wounded, and 8,245 presumed dead, missing in action, and prisoners of war—a total of 211,358.

Our lads spread out to cover the extra ground, but were driven back. Some of the Canadian guns were captured, and our Montreal Highlanders and others were determined that no Canadian guns should fall into the enemy's hands, and charged through a wood and retook them. The Germans thought that we must have heavy reserves or we would never attack in such a way, and instead of pushing through they entrenched themselves as did our boys also, and time was gained.

In the next few days reserves were brought up and Calais was saved. It is said that a German major was taken prisoner, and as he was being led back to the rear and saw nothing where he expected to find masses of troops, he was distracted, and again and again cried, "Let me go for half an hour and Calais will be ours." But Calais was saved, and the course of the war has been different because of what our Canadian boys did that day.

Many of those who took part in that terrible struggle I knew personally. Before my eyes there rises the picture of Major Norsworthy. In his early thirties, handsome and vigorous, he had brains, sound judgment, self-reliance, and energy such as few possess, and had he lived he would certainly have been one of the most prominent financial men of Canada.

And Captain Guy Drummond, aged about 28, son of Sir George Drummond, inheritor of wealth and honored name, tall, refined, the very finest type of the high-principled gentleman. When last seen he was using his knowledge of French, trying to rally the flying Moroccans. But they, poor fellows, were past being rallied, as they fled, gasping for air, their faces blue, and with death already fastened upon them, for of those who fully inhaled that devilish poison few would survive a year of agony, and the rest would be invalids for the remainder of their lives.

But perhaps the story as told by a fine young fellow, a private, Billy MacLagan, who has often been in my own house, may bring the details home to us more closely. Billy went over with the first contingent, and is one of the few, the very, very few, who have gone through

the four years of struggle without a scratch. He wrote us his experiences. They were spared the worst of the gas, and put mud and spittle on their handkerchiefs and tied them on their faces. He gave us the full details of how, later on, out of the mist, flood after flood of Germans came charging on.

Our boys fired and fired until the German dead lay thick before them, and their gun barrels were red hot. And still they came on, wave after wave of gray figures. We held them, while our own numbers dwindled alarmingly. The captain went, then the lieutenant, and at last in the whole trench there remained but three—a corporal, Billy, and a drummer boy of fifteen.

The Huns paused and the three slipped out over the top and crawled back. The little drummer boy gave in under the sights he had crawled through and over, and began to shriek, covering his eyes. The big corporal grabbed him and thrust him within his own great coat, buttoning it up, so that the little fellow could see nothing, and so they continued. At last they met reinforcements, and Billy returned with them to show the way. They were even then but a handful, but the Germans did not know that and the attack was stayed.

"NONE BUT GREEN TROOPS COULD HAVE DONE THAT"

It was a French officer, I believe, who said that no veteran troops could have done better. Then he corrected himself, "None but green troops could have done that—they did not know they were beaten; they did not know enough to retire!" The Channel ports were saved, but at what a cost!

But while we are proud of our Canadian boys, do not suppose that I claim any special superiority for them. Scotland has in the British armies about twice as large a proportion of her population as has Canada. There are glens in Scotland where not one man of military age is now living. And nothing makes our Canadian soldiers more annoyed than any claim by those at home that they are any better than the troops from Scotland and England.

We from Canada feel that we have

done well, but we take off our hats to the mother country. One of the lessons we have learned from the war is to appreciate the Scotchman, the Englishman, and the Frenchman as we never did before; and we appreciate them now because we know them now.

CANADA AND HER VICTORY LOANS

Now let us turn to finance:

We are a young and borrowing country; we have been an extravagant country, and we thought we could do little toward financing the war. At the beginning the mother country advanced money to the various dominions at the same rate as she herself had to pay, but by 1915 we began to rely on ourselves. The government issued the call for the first domestic loan. They asked for \$50,000,000, and wondered if they would get it. The subscriptions came to over \$113,000,000. On the strong urgency of the larger subscribers the government took \$100,000,000 of this amount.

In September, 1916, they asked for \$100,000,000, and we offered them \$201,000,000.

Six months later, in March, 1917, they asked for \$150,000,000, and we offered them \$254,000,000.

In November of the same year they asked for yet another \$150,000,000, and we offered them \$419,000,000. For this loan the government had reserved the right to accept all subscriptions, and they did take \$400,000,000.

If in 1915 a man had told us that within the next two years the people of Canada would supply the government with \$750,000,000, or \$100 for every man, woman, and child in the country, he would have been looked on as a wild visionary. People do not know what they can do until they really try, and we surprised ourselves.

The subscribers to our first loan numbered 24,800; to the last loan they numbered 820,000, or nearly one in nine of the population. And now our government has asked for \$300,000,000 more, and I shall be surprised if the answer is not at least \$500,000,000, and I imagine that they will take it all.

We shall have a heavy debt, but what of that? We shall carry it with ease, for



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WOMEN AT WORK ON MINE NETS

Not only in the actual manufacture of explosives and shells have Britain's women been bearing a large part of the burden of war, but in preparing these instruments of destruction for immediate use. This group of war workers is engaged in wiring floats for mines. •

we are young and growing, and our shoulders are broad. Canada never was so strong or so prosperous as at this moment. The safest government bonds in the world are those of the United States and Canada, and I bracket them together as regards security.

Not merely have we raised these large amounts of government loans, but we have kept up the price of our bond issues, so that every person who bought a Canadian Victory Bond can today get for it on the spot more than it cost him. The brokerage and bond houses of the Dominion have been organized into a great committee, and whenever any bond is offered for sale it is at once resold to other purchasers.

The demand for bonds has been stimulated until it now exceeds the supply, and the market price is above the cost price. Our government can borrow this year on slightly better terms than it had to give

last year. That speaks for itself for the value of the bonds and the credit and wealth of the country.

In addition to paying for the upkeep of our own troops, Canada has granted war credits to the Imperial Government of \$532,000,000 with which to purchase foodstuffs, munitions, etc., in the Dominion. Our banks have loaned the Imperial Government \$200,000,000 more. But despite the withdrawal for government loans, the deposits in our banks are \$300,000,000 more than they were at the beginning of the war. The country never was so wealthy.

HOW THE DOMINION TURNED TO MUNITION-MAKING

Prior to the war we lived too easy a life, and our municipalities and corporations borrowed freely in Britain. When the British markets were closed we turned to the United States. Of our

provincial and municipal securities sold in 1916, 85 per cent went to the United States. Of similar securities sold in 1917, only $2\frac{1}{2}$ per cent went to the United States.

Our expenditures for war purposes have now risen to about a billion dollars. A considerable amount of this has been raised from taxes. There has been a tremendous increase in the national revenue. But the way in which this extra money has been raised and the kind of taxes which have been imposed would, I am sure, not be interesting. You know all about that sort of thing in your own country. Perhaps I had better say the details would be interesting but not very pleasant.

But more than men and money were required. There was a pressing need for munitions with which to meet the German hordes. Canada had never been a great manufacturing country. But again we surprised ourselves, for we have already supplied 60,000,000 shells, which I have no doubt have done good work. We have furnished munitions to the value of \$1,000,000,000, and will soon have furnished another \$200,000,000 worth.

We are helping in shipbuilding, too, for we expect to turn out this year about 500,000 tons of new shipping, about two-thirds of steel and one of wood. I understand that this will about equal one-fourth of the output of the British shipbuilding yards for the year of 1917.

In aircraft, too, we are trying to do our share. We are turning out about 350 aëroplanes per month. The total to date is about 2,500. Besides that, we are manning them.

CONTRIBUTIONS TO MANY ACTIVITIES

But it has not been all men, money, and munitions. Our people have responded gloriously to all appeals for the relief of suffering. For our Canadian Patriotic Fund, which looks after the wives, children, and dependents of our men at the front, we have already given \$44,000,000. For every two dollars the government has asked from the people it has generally been given three.

To the Red Cross the contributions have been \$12,000,000 in cash and \$15,000,000 in supplies. Of the cash con-

tribution, \$7,000,000 were spent by the British Red Cross and the balance by the Canadian Red Cross. According to a newspaper item which I saw the other day, Canada leads all the nations of the world in Red Cross contributions per capita.

To the Belgian Relief Fund we have contributed over \$1,500,000 in cash and an equal amount in supplies, while \$8,000,000 more went to French, Serbian, and Polish relief funds and numerous other charitable and patriotic associations.

For military work by the Y. M. C. A. the contributions have been \$4,500,000.

In addition to the donations from the public, the Dominion and Provincial governments have given \$5,250,000 for charitable work through the Imperial Government. In all, the relief contributions from Canada amount to \$90,000,000, or over \$12 for every man, woman, and child in the Dominion.

Our educational leaders have also organized the Khaki University for educating the men at the front and fitting them for their return to civilian life, and our government has undertaken its support. This idea has now been copied in Britain, France, and I believe even in Germany. It had birth in the brain of Dr. H. M. Tory, president of the University of Alberta. Dr. Tory has entire charge of the work on the other side.

To summarize what we have done in finance. We have paid about one billion dollars for war expenditures, and have raised \$750,000,000 of this amount by domestic loans. We are asked to raise another \$300,000,000 during November for further expenditures, and I feel sure we will offer \$500,000,000. We have given a credit of over \$500,000,000 to the Imperial Government for purchase of munitions and supplies, and our banks have given a further amount for the same purposes of \$200,000,000.

We have supplied 60,000,000 shells, one billion dollars' worth of munitions, and will soon deliver \$200,000,000 worth more. We will, besides, this year add 500,000 tons of shipping, and are making 350 aëroplanes per month, having already completed 2,500, and in addition to all this we have contributed \$90,000,000 to relief work.



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ARMED WITH BUCKET AND PASTE-BRUSH, SUE BECOMES THE OFFICIAL TOWN BILL-POSTER AND RELEASES A MAN FOR THE ARMY

When her father answered his call to the colors, this girl of Thetford, England, carried on his work as official bill-poster and town-crier for the town council

We are a practical people, and yet a sentimental strain runs through us. We have always a soft spot, and especially for those who help us or do us a good turn. Did you ever hear of the Canadian soldier who hailed from one of our Scotch settlements? In the course of an attack Sandy was rushing forward, rifle and bayonet at the charge, when suddenly he was attacked viciously by one of his smallest enemies, who was also nearest at hand. He felt that he could not do justice to the enemy in the distance unless he first disposed of the enemy in his midst. So he paused, put his rifle in the hook of his elbow, and made a vigorous home attack.

He was successful. But just as he caught his tormentor a German shell burst in front of him, in the very spot where he would have been had he not paused. Sandy held the little thing before him, and as he looked at it he said: "Weel, ma wee mon, I canna give ye the iron cross; I canna give ye the Victoria Cross, but ye hae saved ma life. I must reward ye somehow. I'll just put ye back where ye belong." And back he went.

TAKING A MAN'S PART IN THE GREAT STRUGGLE

For years before the war broke out, many of us knew of Germany's ambitions to rule the world, and feared that this struggle was coming. The question had to be settled whether Anglo-Saxon ideals of freedom and democracy were to prevail or the world was to be Germanized and ruled by the Kaiser.

When the future of humanity was at stake, we wanted to have some influence in the decision, and we were thankful that, as part of the British Empire, we were at war and privileged to take a man's part in this great world struggle, the greatest crisis that has come in the history of humanity for over a thousand years.

There was no compulsion on us. The Germans expected us to stay out, and simply could not understand our going in. At first we were influenced by patriotic and humanitarian reasons which we felt in a general way. But our boys soon came in contact with German bru-

ality in a concrete way and our feelings became vastly deeper and more intense.

For instance, Lieutenant Holt, of Winnipeg, returned on leave of absence and brought with him as a souvenir a little doll. In one of those early days his regiment was forced back by the enemy through a Belgian village. He stopped at a small house to ask directions, and a little girl of about seven years ran out and gave him her dolly. She said, "Please take my dolly to a safe place." To please her he took it. Next day our men retook the village and he at once went to the cottage to see how the child had fared. He found her—lying across the threshold, dead—killed by a German bayonet. Lieutenant Holt brought back that dolly to a safe place in Canada, but your boys and our boys are now fighting that the whole world may be made a safe place for little mothers like that.

King's Staff-Sergeant James W. Smith, who has returned with his right arm shattered and shortened and the hand little better than a deformed claw, who was foreman in the W. C. White boiler works of Montreal and is now superintendent in a munition factory, told me personally that he had himself assisted in taking down some Canadian soldiers who had been crucified by the Germans nailing them to a barn door. Do you wonder that our Canadian boys were very demons in ferocity when next they attacked?

NO SELFISH CONTEST

It is no selfish struggle in which we are engaged. Like you of the United States, we have nothing to gain. We seek no territory, no indemnity, no advantage. But, like you, we are glad and proud to be in, and glad and proud to have been of any service.

This is the brief story of some of the things that have been done. But after all, those things belong to the past; they are written in history and are now mere records and memories. Nothing that we can now do can change them, and the future, which we have the power to change, is therefore more interesting and more important. In our outlook on the future we are now, thank God, united as Allies—Allies who are working together with heart and soul.



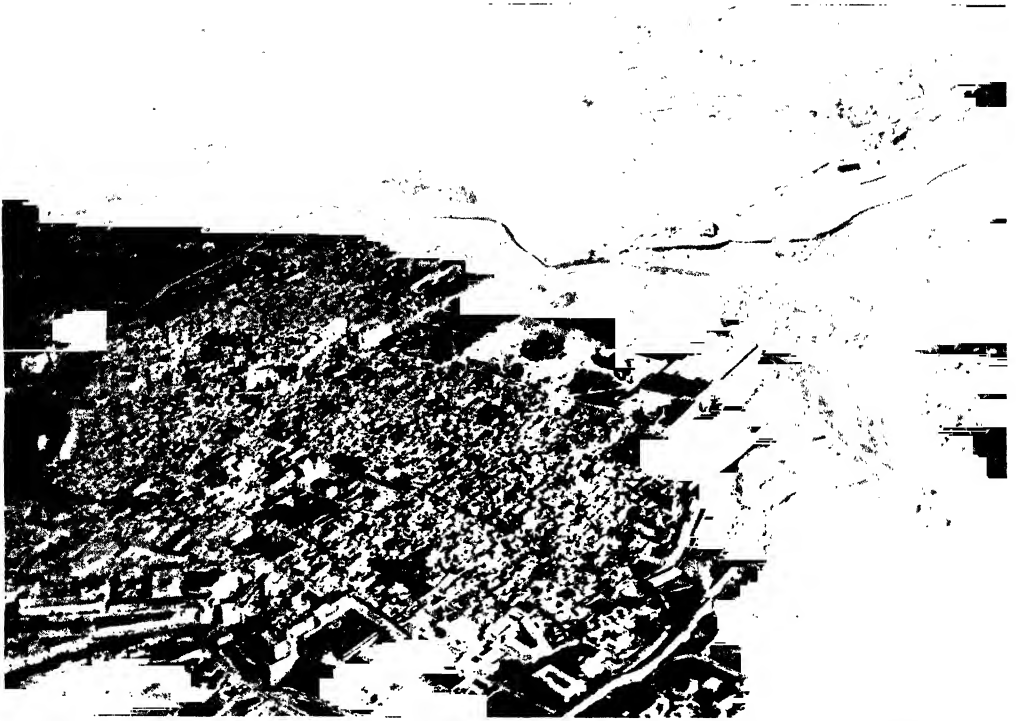
A VIEW OF JAFFA, THE ANCIENT PORT OF PALESTINE WHICH WAS USED AS A BASE OF OPERATIONS IN THE BRITISH ADVANCE UPON JERUSALEM

In the time of Solomon, Jaffa was the port of Jerusalem, and it was here that the cedar from Lebanon was landed for the construction of the Temple. In the middle ages the seaport figured in many of the crusades. Napoleon captured it in 1799, and now it has helped the Twentieth Century Crusaders of Britain to deliver the Holy Land from the Hun and the Turk (see also pages 325-344).

I should like again to express my admiration of the magnificent work which you of the United States are doing. If we in Canada can but keep pace with you, we shall be satisfied. We shall at least try.

My last word is a vision which I and other Canadians note with joy is already in the first stages of realization. I see the United States and the British Em-

pire, the two great branches of the English-speaking world, going down through the centuries arm in arm, coöperating as brothers, each helping the other, each strengthening the other, and unitedly blessing the world and making it safe for democracy. The Germans have succeeded in unifying the Anglo-Saxon world.



Photograph by an Australian Aviator, from C. W. Whitehair

A VIEW OF THE HOLY CITY OF JERUSALEM FROM THE SKY

The conspicuous area in the middle of this airplane photograph is the "Place of the Temple," in the center of which is the glittering Mosque of Omar, one of the richest temples in the world. Beyond is the elevation known as the Mount of Olives, crowned by the Kaiserin Augusta Victoria Hospice, in which the German Government installed a powerful wireless outfit. The Church of the Holy Sepulchre can be distinguished near the center of the city. The Garden of Gethsemane lies between the Mosque of Omar and the Mount of Olives (see also pages 325-344).

THE HEALER OF HUMANITY'S WOUNDS

IN PEACE as in war, there is no organization more necessary for the alleviation of suffering than the American Red Cross, some of whose distinctive activities are most effectively portrayed in the exclusive photographs on pages 309-324. Now and ever the hearts of countless millions of the soldiers of every land who have survived the awful conflict of the War for Eternal Peace glow with gratitude when the Red Cross is brought to mind; their children and their children's children will remember it with the exact antithesis of the feeling inspired by thoughts of war.

Great as the Red Cross was in war, yet greater is it in peace, and its usefulness is now supreme in the months and years of restitution, rehabilitation, and recon-

struction in the countries of our staunch friends, who so bravely bore the brunt of the brutal thrust which threatened the safety of the world and who held at bay the militaristic machine of the last of the Huns until the armies of democracy could gird up their loins and destroy it.

The American Red Cross needs now the support of every American more than ever before. To help in this work of relieving civilian suffering in devastated France and Belgium is the paramount privilege of every man, woman, and child in the United States. The widows, aged parents, and fatherless children of the heroes who died to stem the tide of autocratic advance require *your* assistance, through the Red Cross, in regaining their equilibrium to face the problems of the future.



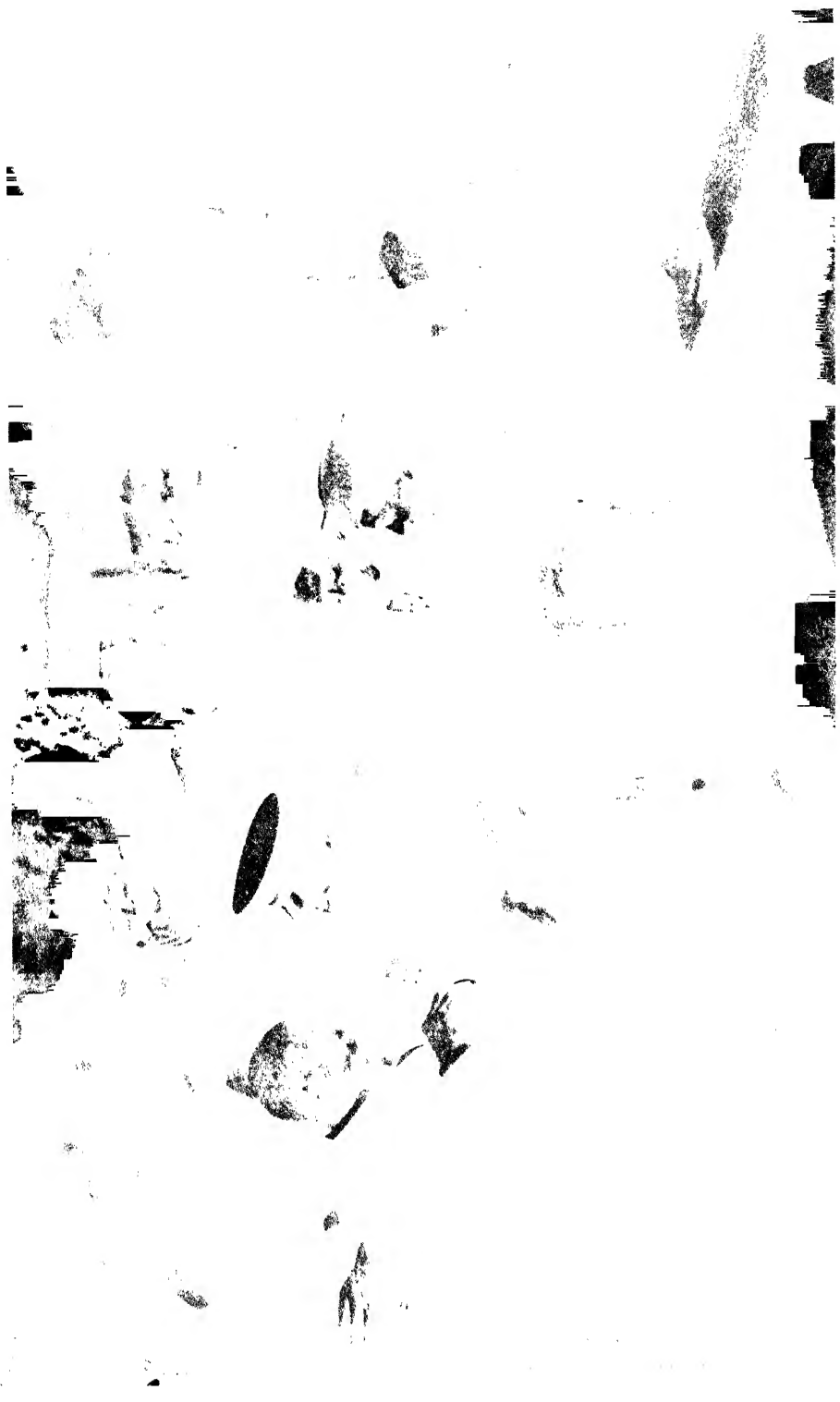
AN ADOPTED SON OF AMERICA

"I like the American soldiers. They have come to protect my country. And I like especially my god-fathers," says Andre Claudel, a ten-year-old orphan who has been adopted by a number of army field clerks in France. Andre's mother died a year ago and his father was killed in the Argonne. He is a serious-minded little French boy and one of the best students in the refugee colony at Caen. Many French orphans have been adopted by American troops, and the American Red Cross administers the funds for their maintenance.



AMERICAN FUN IN A LONDON HOSPITAL.

Remember the home paper you sent him? Well, here it is! A fellow must do something to while away the hours when he is convalescing—even in an American Red Cross hospital in London. And in spite of wounds received in action, these true-to-type Americans must make paper caps and “play soldier,” for “men are only boys grown tall, and hearts don’t change much, after all.”



THE RATIFICATION OF A FRANCO-AMERICAN ALLIANCE

In the garden of the American Red Cross recreation hut at Orleans a Yankee chaplain and a group of doughboys are entertaining a French visitor and in turn being entertained by him. It was the aged governor of one of the war-torn French provinces who said that "though France has long known of America's greatness, strength, and enterprise, it has remained for the American Red Cross in the war to reveal America's heart."



A BELOVED RED CROSS COOK

Here, in his robes of office, is Thomas—"King of the Cookies." Thomas is a Washingtonian and one of the most popular men in France. Needless to add, the smiling Yankees surrounding him have just partaken of his wares at one of the many American Red Cross line-of-communication canteens.



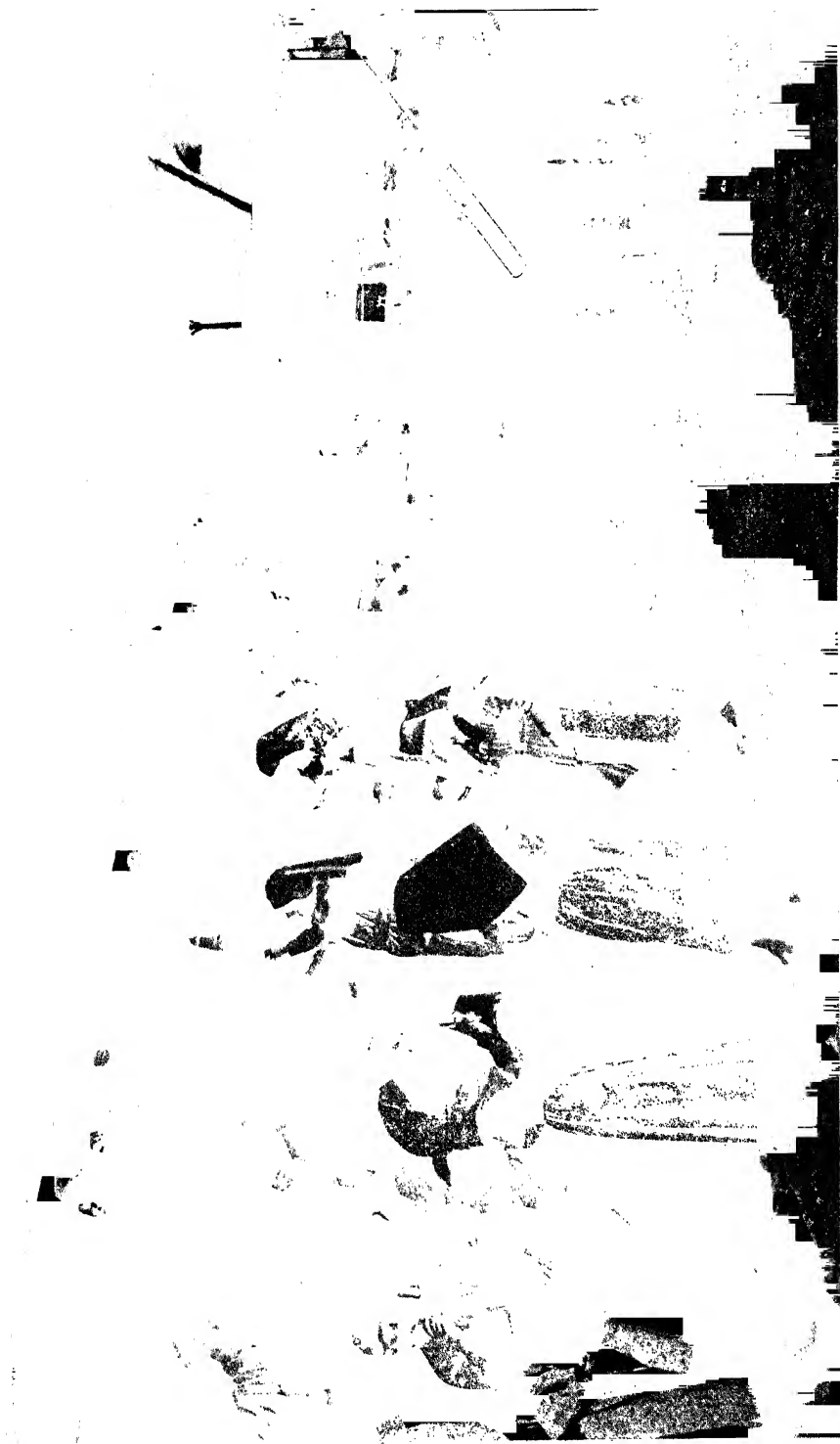
THEIR FIRST TREAT ASHORE

When our troops were headed for France there was a keen rivalry among the soldiers to be the first ashore, and the American Red Cross canteen was the immediate objective; the direction is now reversed, but the objective remains the same



AMERICANS ALL! THE RED CROSS KNOWS NO DISTINCTION OF RACE, COLOR, OR CREED

Your Red Cross membership dollar serves all alike. Here the camera caught a recreation worker introducing a group to the Recreation Hut at Auteuil. There are three Spaniards, a Mexican, an Indian, and a Negro; all are serving under the Stars and Stripes; all are American soldiers.



RED CROSS WORKERS AND A BRASS BAND CHEERING A TROOP TRAIN ON ITS WAY

Trainloads of American soldiers and marines pass through Issoudun, in the central part of France, every day. Simultaneously with the arrival of every troop train, the American Red Cross canteen workers appear laden with coffee and sandwiches for the boys, while the band from the camp where the canteen is located plays a good old Yankee tune.



ALL THE THRILLS OF WAR ARE NOT AT THE FRONT! A DOUGHBODY RECEIVING A RED CROSS GIFT

Nothing is withheld by the American Red Cross that can be given to supplement the efforts of the army and navy in caring for our boys—nothing that will add to their safety, comfort, and happiness. Here the workers at one of the line-of-communication canteens are passing out sandwiches in boxes to American soldiers in France.



WOUNDED BUT HAPPY IN OLD ENGLAND

While enjoying a sun bath outside one of the United States military hospitals in England, these boys have received a visit from the Care Committee of the American Red Cross, which daily distributes flowers, "smokes," and papers to the soldiers from "the States."



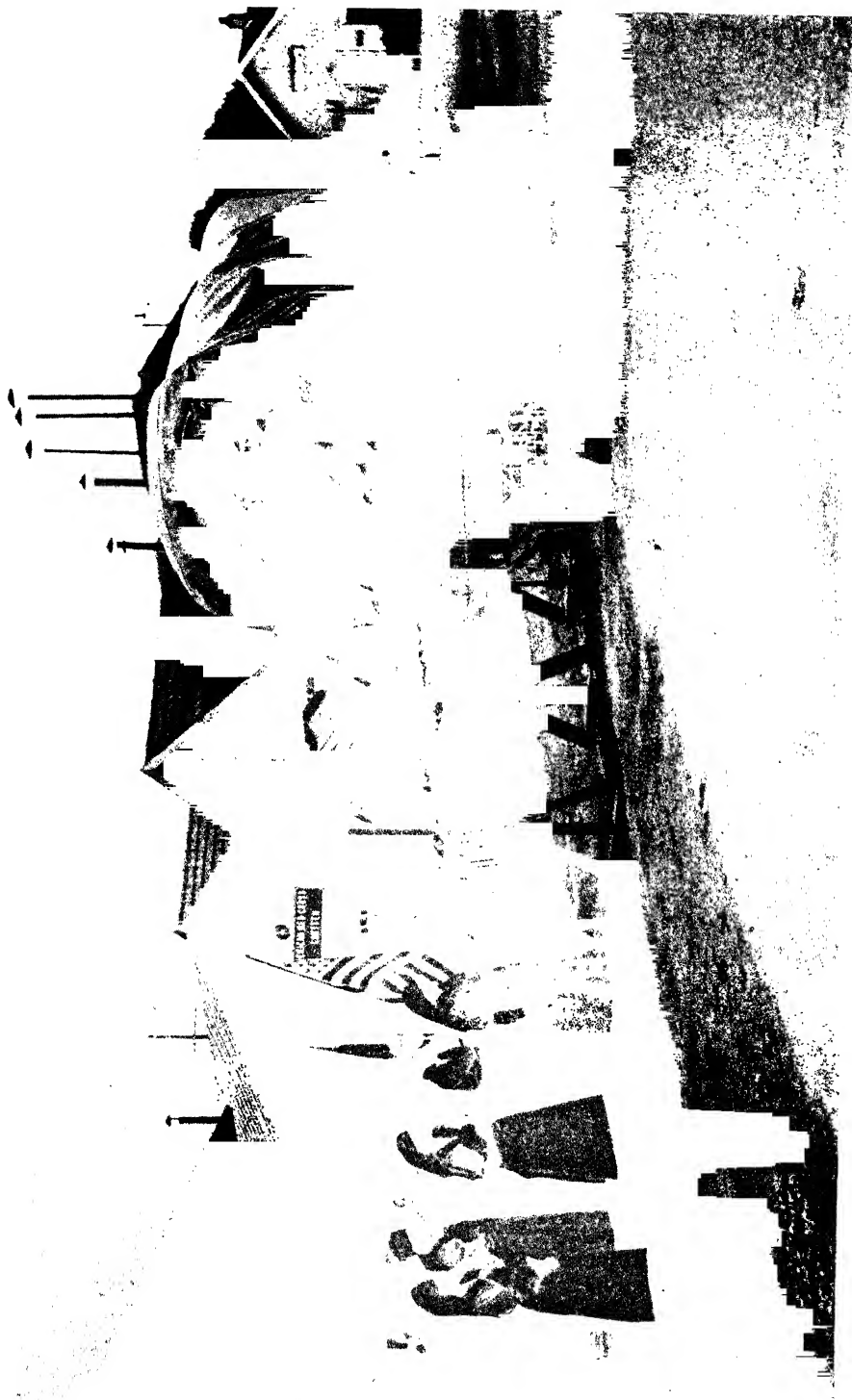
"CHOW TIME" MARKS A BRIGHT SPOT IN THE DAY

Care like this is proof to the Yankee soldier that the "mobilized heart and spirit of the American people" have been equal to every call—ready to respond to any emergency. In the American Military Hospital No. 1, at Neuilly, the members of the National Geographic Society are maintaining several wards where American boys are being restored to health and usefulness. Patriotic and sympathetic women of the Society's membership made and donated great numbers of afghans, quilts, convalescent jackets, pajamas, bath-robos, handkerchiefs, and other articles which have alleviated the suffering of our wounded.



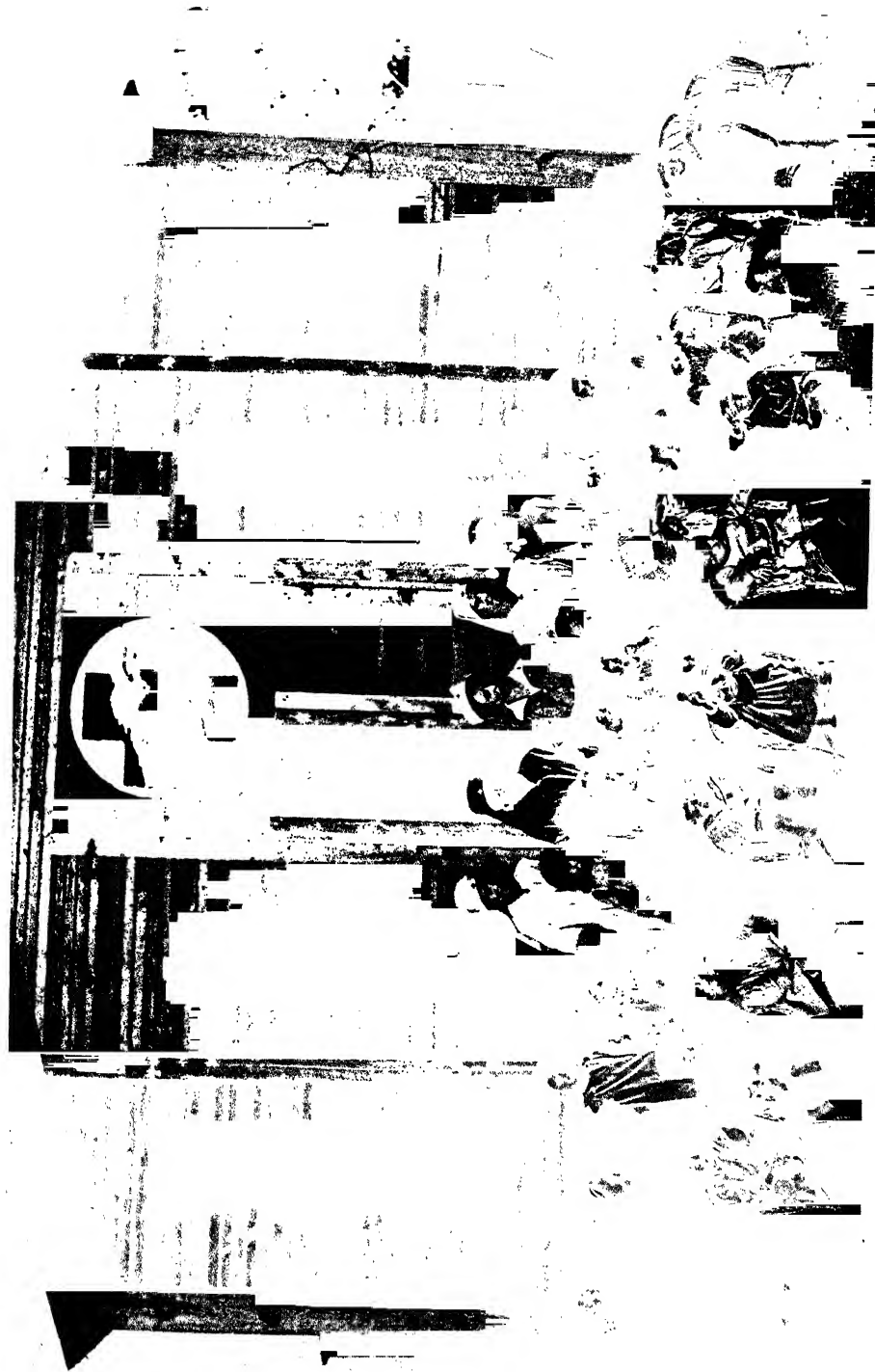
YOUR RED CROSS MEMBERSHIP DOLLAR AT WORK

Wherever there are American soldiers this American Red Cross canteen scene is duplicated as a direct result of your membership dollar. At these canteens opportunity for a brief rest is provided, coffee and sandwiches are tucked under belts, and pure, filtered water is to be had from the hanging bags shown in the background of the picture.



A GOD-SPEED FROM THE RED CROSS WORKERS

When this picture was taken this army canon was headed for the front; now it is reversed. Many of our men are coming home, and the Red Cross workers might be bidding them "bon voyage," for these women are staying to help in the great work of the reconstruction of France, in which their organization is proving of so much value, and in the returning of millions of American troops to their native land.



AMERICAN RED CROSS "CRACHE" : A DAY NURSERY FOR WORKERS' CHILDREN

The mothers of these little French children were needed in an arm^y camouflage factory to paint the great quantities of burlap and canvas used to conceal guns and works at the front, so the American Red Cross established this nursery. Now there is even greater need of such service and it will continue until a readjustment has taken place and Belgium and France have been restored.



A RED CROSS "MOVIE" AUDIENCE IN FRANCE

There is no doubt in America that the Yankee soldier is individually and collectively the handsomest fighting man on earth. His lofty ideals and high standards of living have combined to place him physically and mentally on an elevated plane. The American Red Cross has an important work in providing him with "extras" of all kinds, including entertainment.



THE MUSIC CORNER IN A RED CROSS CANTEN GIVES A TOUCH OF HOME SOCIAL LIFE

The first war-time purpose of the American Red Cross was to help win the war; the second was to save civilization while the war was going on. Now its greatest usefulness consists in minimizing the effects of the war on civilization—a purpose which merits the support of every American.



A SMILING HERO

From the day the United States entered the war up to July 1, 1918, the women of the American Red Cross made 10,786,489 hospital garments for the use of "our boys." Here is one of both—boy and garment. The boy is cheerful in spite of the load of shell fragments he is carrying in various parts of his anatomy, and the garment—maybe it's from your own Red Cross chapter.

AN OLD JEWEL IN THE PROPER SETTING

An Eyewitness's Account of the Reconquest of the Holy Land by Twentieth Century Crusaders

BY CHARLES W. WHITEHAIR

SINCE King David, nearly three thousand years ago, captured Jerusalem and made it his capital, it has been a coveted prize, sought not so much by the nations for its military importance as for its sacredness to three of the world's greatest religions.

For to the Jew and the Mohammedan, as well as the Christian, Jerusalem is "The Holy City." Throughout its history the wearied feet of millions of pilgrims from far-distant lands have never ceased to climb over the rocky Judean hills to pay homage and to worship within its sacred walls.

To the Jew, as the home of his forefathers, it has always been of hallowed memory in spite of the hundreds of years of his exile.

To the Christian, Jerusalem, with the surrounding country, is truly "The Holy Land," for it is the land of his Lord's birth, His ministry, His crucifixion, His resurrection. Throughout Christendom the names Jerusalem, Mount of Olives, Bethlehem, and Garden of Gethsemane are laden with meaning, even to the smallest school child.

To the Mohammedan, Jerusalem is second only to Mecca in sanctity.

Repeatedly besieged, captured, and recaptured, practically all of the great nations of history have held sway over the Holy City—the Israelites, Egyptians, Babylonians, Persians, Greeks, Assyrians, Romans, Saracens, Crusaders, and Turks—and its surrender in the past has nearly always meant the destruction of its buildings and the wholesale slaughter of the population.

BRITISH CAPTORS WITHHELD SHELLFIRE
FROM THE SACRED CITY

The treatment which Jerusalem has received at the hands of her British captors

stands out in strong contrast to her past history of suffering.

Realizing the importance of Jerusalem to the Christians, the Jews, and the Mohammedans, General Allenby so planned his campaign that he captured the town without firing a single shell into the ancient walled city.

However, the capture of Jerusalem is only an isolated incident in the great Palestine campaign. Operating in an inhospitable, hostile country, where not only food, clothing, and munitions had to be transported from great distances, but even water carried many weary miles to her forces fighting amid oppressive desert heat, Great Britain and her colonies, practically unaided, crushed the Turkish Empire.

To do so she sent a million men to the Holy Land and Mesopotamia, transporting them an average distance of about 3,000 miles through submarine-infested seas. And these campaigns were conducted simultaneously with the major operations of her armies in Belgium and France and the activities of other hundreds of thousands in Macedonia and East Africa!

Early in 1915 the Turkish forces, aided by the Germans, were launched against the Suez Canal—the main artery of the British Empire, connecting Australia, New Zealand, and India with the mother country. In February, a small force of the enemy reached the canal and was driven back; but in order to protect this vital waterway it became necessary for the British to launch an offensive.

This meant pushing forward over 150 miles of desert, which marked the beginning of the long, weary months of fighting on the Sinai Peninsula, known as the Desert campaign. America can little realize those awful days of suffering.



A CARAVAN OF THE BRITISH CRUSADERS SILHOUETTED AGAINST THE SKY AND DESERT SANDS OF RESCUED PALESTINE
In its Sinai Peninsula desert campaign the British army mustered tens of thousands of burdened beasts, the greatest camel transport corps in the history of the world



Photograph from C. W. Whitehead.

AN AUTOMOBILE HIGHWAY IN THE HOLY LAND

The going is seldom smooth for a motor car in Palestine, and the rainy season offered additional obstacles to the British in their advance upon Jerusalem. But the mud and the mountain torrents were far preferable to the suffocating dust and almost unendurable desert heat of the dry season, when the Jordan Valley advance was made.

During the summer of 1916 I visited every part of the Sinai front, and in no part of the war zone have I seen men undergo greater privations and hardships. Every gallon of water had to be carried forward in great tin boxes, called "fantasses"; and in time the British mustered the greatest camel transport the world has ever seen, running into the tens of thousands of burden beasts.

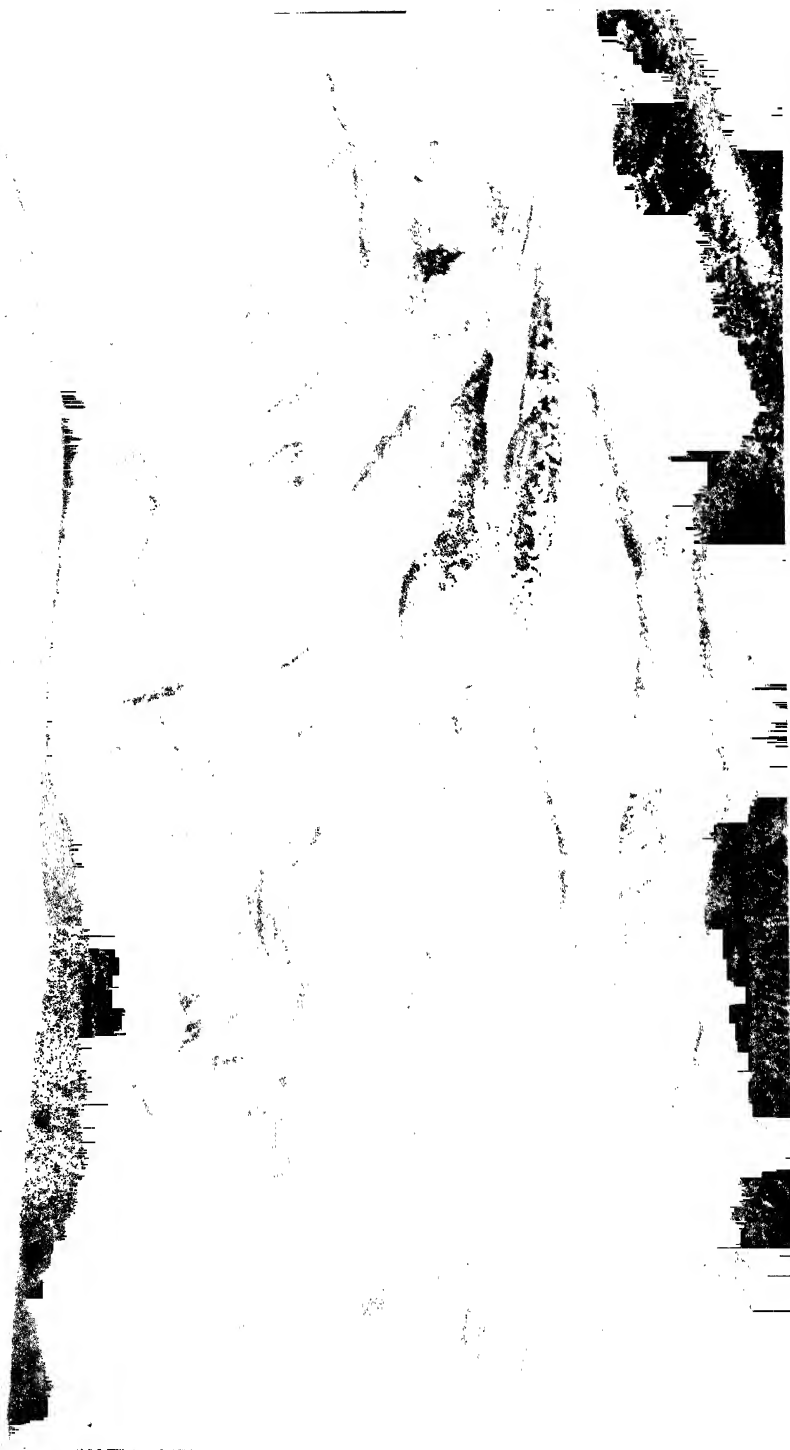
It was no easy matter to move forward the guns and keep up the lines of communication, for the wheels of the motor-cars and artillery sank deep into the soft sand. One enterprising young officer discovered that by laying chicken wire on the sand, motor-cars and guns could be moved forward.

THE GREAT BATTLE WITH DESERT THIRST

On the desert, many weary months went by. The army had not only to fight

the Turk, but the heat, dust, flies, and thirst as well. And the worst hardship of all was the unquenchable thirst. Only those who have gone into the desert really know this awful, unbearable, ever-gripping, burning thirst.

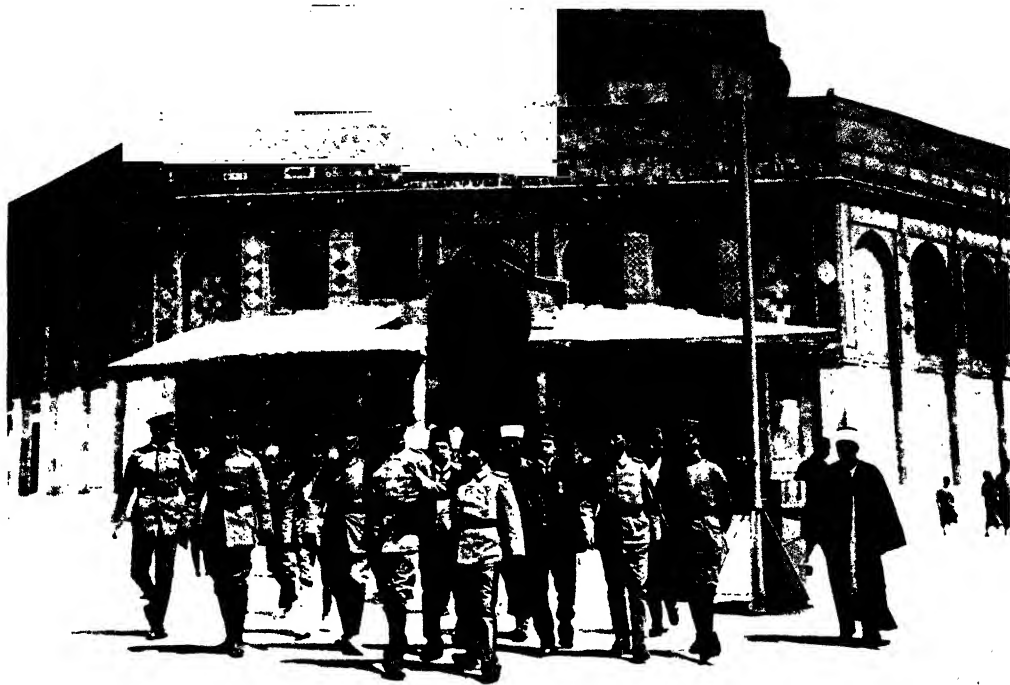
The desert thirst has no equal. The sizzling hot sun on the sand, the glaring light, and the burning heat get into the blood, and the victim begins to want water. If he is fortunate enough to have the water, he drinks, but his thirst remains unsatisfied; and then, after he drinks, he begins to perspire and his throat becomes dry and parched and his body becomes a roaring furnace, while his clothes are soaked with perspiration. He can literally drink gallons. But the lads who went over the scorching sands of Sinai had only one gallon of water a day per man—one gallon for cooking, washing, and drinking.



Photograph from C. W. Whitehair

THE WILDERNESS OF JUDEA FROM THE HEADQUARTERS OF THE DESERT MOUNTED CORPS OF THE BRITISH FORCES

The British army in Palestine had not only to fight the Turk, but the heat, dust, flies, and thirst—that awful, gripping, burning, unquenchable desert thirst



Photograph from C. W. Whitehair

GENERAL VON FALKENHAYN AND DJEMAL PASHA LEAVING THE MOSQUE OF OMAR
IN JERUSALEM

This is one of the numerous official Turkish photographs which fell into the hands of the British following their successful "Palestine push." There is no more formidable fighting man in the world than the Turk, and Germany sent some of her ablest officers to the Near East to organize and direct the operations of the Ottoman troops against the British; but the triumph of General Allenby's men was complete.

In the entire campaign, every gallon of water had to be brought from the River Nile by means of pipes. The water was stored in great reservoirs prior to being filtered for the troops.

It was not only necessary to bring the Nile water hundreds of miles for the army, but in many instances water had to be furnished to the captured civilian population along the line of march, due to the fact that the Turks destroyed the wells as they retreated.

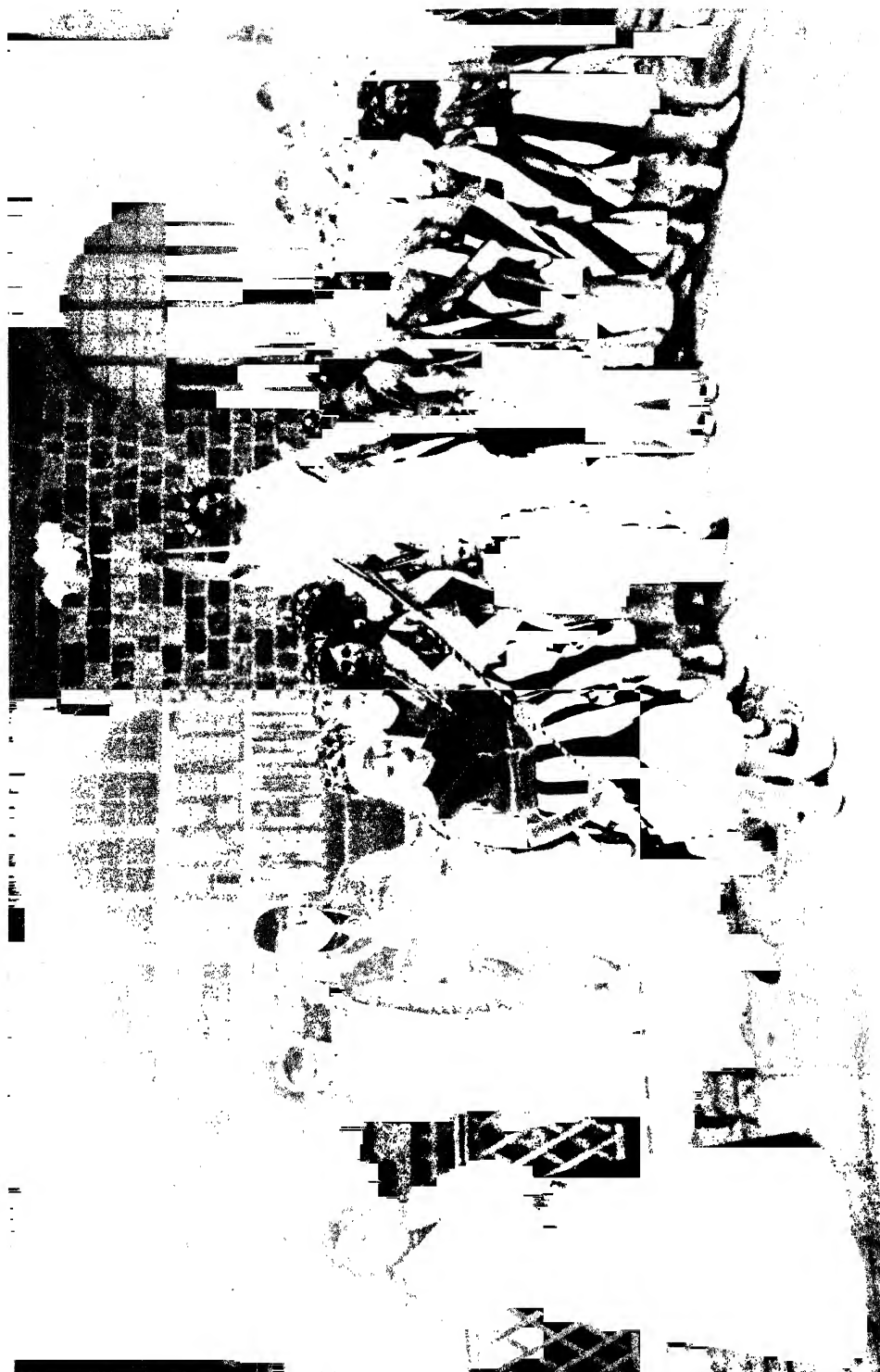
But, in spite of heat, thirst, the difficulties of transport, and the combined Turkish and German resistance, the British forces moved slowly forward until they reached the strong enemy line stretching from Gaza to Beersheba. It was at this juncture in the operations that General Allenby, in June, 1917, came out

from France, took over the command, and began the "Palestine push."

The success of the whole campaign very largely centered around the railroad, which was constructed mile by mile as the army moved forward. Much of it had to be built under constant fear of aerial bombardment. But probably no railroad has carried as large an amount of freight in the same length of time, for all the food, munitions, guns, and men for Palestine are moved over the one track.

THE GIFT OF THE LAST CRUSADERS

Before the war, in going to Jerusalem it was necessary to proceed by boat from Port Said to Jaffa, thence by rail to Jerusalem, for the trip across the sands of Sinai took about eight days by camel. Today the traveler can go to bed on a



Photograph by American Colony, from C. W. Whitehair

CELEBRATING AMERICAN INDEPENDENCE DAY IN JERUSALEM UNDER THE AUSPICES OF BRITISH COMMANDERS

The officer in the foreground, to the right of the children, is General Allenby, the distinguished victor in the great "Palestine push"; behind him stands Col. Ronald Storrs, the British Military Governor of the Holy City

comfortable train at the canal base camp, Kantara, and arrive early the next morning in Jerusalem.

This quick and comfortable trip has been made possible by the last Crusaders, many of whom sleep beneath the lonely crosses that mark the road from the Suez Canal to the gates of the Holy City.

On December 5 the British forces had fought forward to a line from Neby Samwil to a position opposite Ain Karim, a distance of just under five miles.

Neby Samwil is 2,935 feet above sea-level and quite the highest point in the vicinity of Jerusalem. It is about four and a half miles from the north wall of the city. Ain Karim, the traditional birthplace of John the Baptist, is about four miles slightly to the southwest of Jerusalem.

HOW THE ATTACK WAS LAUNCHED

The actual attack on Jerusalem was begun on the morning of December 8. Unfortunately, on December 7 it had begun to rain, and there was a deluge for three days, as it was the rainy season. Mist and fog hung over the hills and made aeroplane observation practically impossible.

The rain also made the roads almost impassable for mechanical transport and the camels were useless. The troops had been moved up in the same clothing they had worn in the desert campaign—khaki drill and shorts—and the men suffered severely from the intense cold.

The general who commanded the 60th division told me that on the night of December 7 he had brought up from Jaffa all the oranges he could get, and then went among the troops and threw the fruit on the ground and made the men scramble for it as they would in a football game, to get them warmed up.

The only food the troops had was bully beef and biscuits. But in spite of cold, rain, and rough food, they were all exceedingly keen to go forward. Every soldier, that cold, rainy December night, seemed to be inspired with the spirit of the old Crusaders, as he went forward, singing, to the attack.

About midnight the British forces reached the position of deployment and the attack began. By dawn they had cap-

tured all of their first objectives. It is impossible to speak of this attack as a charge, because, as I went over all the ground, I found it was quite difficult even to crawl up the side of the hill.

Their last objective lay quite a little way out of the city. It was an old factory on top of the hill, in which there had been installed a large number of machine guns, which swept the slopes.

At 8 o'clock on the morning of December 8, the British left the Turkish trenches they had captured and made for the factory. The only cover was the big rocks on the hillside, and they went forward in the style of the old Indian fighter. At 4 o'clock that afternoon they made a final rush and seized the crest. At 5 o'clock the assailants were in possession, and this practically meant the capture of Jerusalem, as there were no more commanding heights to which the Turks could retire.

THE SURRENDER OF THE CITY

On the morning of December 9, Privates H. E. Church and R. W. J. Andrews, of the 220th London Regiment, sighted a white flag outside of Jerusalem. The news was immediately wired back to Major General Shea, who at once wired General Allenby.

General Allenby telegraphed: "Go forward at once and receive the surrender of the city in my name."

General Shea immediately went forward and from the acting mayor and chief of police he received the surrender of Jerusalem. Of course, it was received outside the city wall.

At noon on December 11 General Allenby made his official entry into Jerusalem through the small, narrow Jaffa Gate, on foot, in his ordinary active service uniform, without even the display of military medals.

What a contrast to the entry of the Kaiser, when he made his pilgrimage to Jerusalem in 1898! His agents had the Turks tear down a part of the city walls near the Jaffa Gate so that he could advance through a passage made solely for himself, and on horseback he entered, with all the pomp and glory and display of wealth that the Teutonic mind could conceive.



Photograph from C. W. Whitehair

A CAMEL RACE, ONE OF THE EVENTS OF A Y. M. C. A. ATHLETIC MEET ARRANGED FOR THE ENTERTAINMENT OF THE BRITISH TOMMIES WHO CAPTURED JERUSALEM

That ostentatious entry twenty years ago was looked upon at the time as the action of an egotistical monarch, but now we have come to realize that it was part of a plan to win the Moslem world to Germany. This breach in the wall made possible the entry of carriages into the town, and these have taken away some of the charm of the Holy City; but the vehicles can penetrate only a few hundred feet, as the streets are exceedingly narrow.

However, the world can be truly thankful that henceforth no such desecration of the sacred city will take place. The British, I understand, are planning to repair the breach in the wall, thus restoring all the traditional simplicity of the ancient city.

KAISERISM ON THE MOUNT OF OLIVES

The Kaiser caused to be erected on the beautiful Mount of Olives, overlooking Jerusalem and all the surrounding country, a great stone building altogether out of keeping with the ancient architecture of the city. They called it the Kaiserin Augusta Victoria Hospice, which even then was spoken of as looking more like a fortress than a hospice.

It is a tremendous building, supposed to be for the use of German pilgrims, but it was afterward discovered that it con-

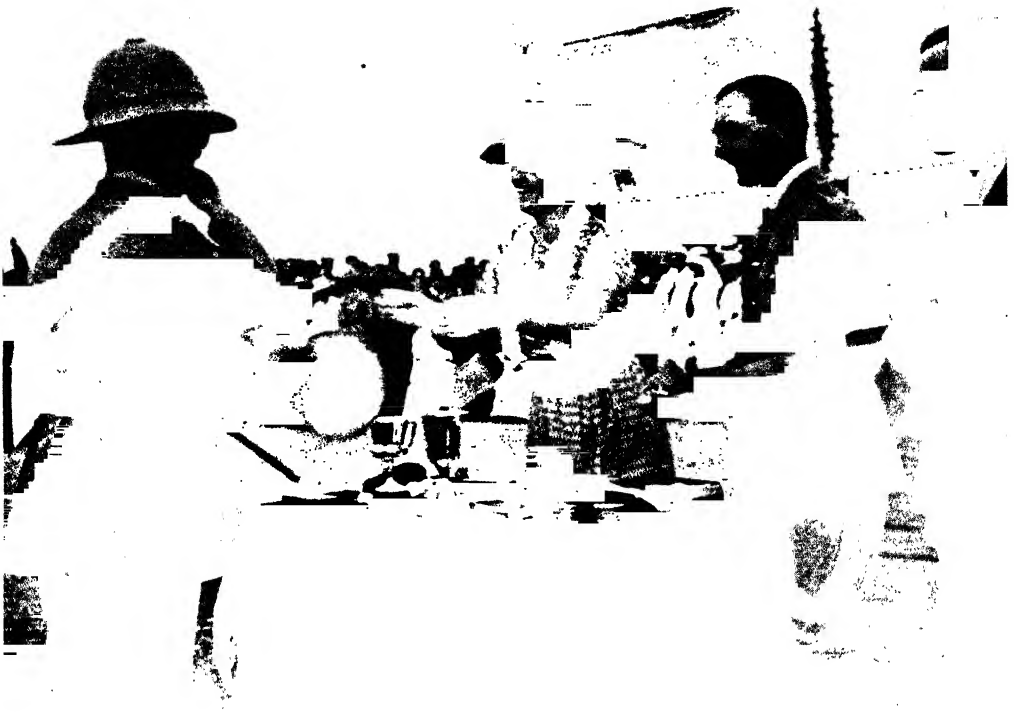
tained a powerful wireless outfit, which, I presume the exponents of German Kultur would explain, was a real aid to the German pilgrims' prayers and meditations.

Later, it was claimed that the foundations of the walls were beginning to give way, thus affording an excuse for building great concrete bases to hold them in place. These bases had a strange resemblance to the ordinary German gun emplacements—a little more German Kultur!

Today, standing at all gates and before all the places sacred to Christianity and Judaism, are British Tommies, protecting them against desecration and spoliation at the hand of war. British Indians, being Mohammedans, guard the Mohammedan sacred places.

Since the capture of the city not a single building has been torn down or damaged, and no changes of any kind are permitted without the sanction of the military authorities. Every single stone is being guarded, so that the city may be preserved unmarred by modern hands.

Upon his entry, General Allenby at once announced to the inhabitants that they would receive just treatment, that no preference was to be shown, and that the people were to carry on their business as they would in times of peace.



Photograph from C. W. Whitehair

LADY ALLENBY GIVING AWAY THE PRIZES AT A Y. M. C. A. ATHLETIC
MEET: PALESTINE

While the Y. M. C. A. has been chiefly instrumental in providing entertainment and diversion for the Twentieth Century Crusaders in the Holy Land, it has also helped the British authorities in solving some of the vital sanitary problems of Jerusalem. It was this organization which secured engine, pump, carts, and wagons for the first sanitary equipment installed in the city.

The first British military governor of Jerusalem was the Postmaster-General of Egypt, Borden Pasha; but he had to resign because of illness, and Colonel Ronald Storrs assumed the title and duties of Governor of Jerusalem on December 27. When he arrived he found that the city was on the verge of famine, and immediate action had to be taken to avert it.

SAVING THE CITY FROM STARVATION

Jerusalem in the past had two main sources of food supply—the first from the sea by Jaffa, which was cut off at the outbreak of the war; the second from the districts east of the Jordan. The latter was interrupted by the Turks when the British captured the city.

No supplies were coming in from the surrounding country, as in December the roads are very bad, and because nearly

four years of Turkish military occupation had stripped the country of all available food resources.

An order was issued requiring the declaration of all grain in the city, for nearly 25,000 people were absolutely destitute and the number was increasing daily. Hundreds of tons of supplies were shipped in and relief work was carefully carried forward under the personal supervision of the Governor and his staff.

The Turks on evacuating Jerusalem took special care to deport all persons occupying important civil offices, such as heads of communities, magistrates, chief accountants, the chief of the police, and other prominent citizens. They had closed all schools, disbanded the police force, and destroyed or carried away every important document or register

(No. 27.)

IMPORTANT NOTICE.

All correspondence must be written in one of the following languages and in the characters indicated:—

English.
 French.
 Italian.
 Hebrew (Hebrew character).
 Arabic.
 Yiddish (Latin or Hebrew character).
 Spanish-Hebrew (old Hebrew character).
 Russian.
 Armenian.
 Greek.
 Spanish.
 Portuguese.
 Dutch.
 Amharic.
 German (Latin or German character).

All other correspondence will be destroyed.

Military Governor.

JERUSALEM IS THE MODERN BABEL

Fifteen languages ought to be enough for any community, but the last line of this official proclamation, issued in the Holy City after the British occupation, is no joke. There are lots of other tongues spoken in the capital of Palestine in addition to the ones catalogued. These, however, are the principal languages to be heard in the streets and observed on the signboards.

connected with the administration. There were no records left; not even title deeds of private property. Private and public institutions had been pillaged.

No medical attention was to be had anywhere in the city, but within 24 hours

after the British occupation two hospitals were opened for the civilian population.

The Governor and his staff personally went to every bakery during the first few days, to see that the women and children got bread and were not crowded away by the men. Nine hundred tons of cereals are now brought to Jerusalem every month, and every precaution is taken to see that the city has sufficient food.

The problem of government was far more complicated than appears on the surface, for in Jerusalem more languages are spoken than in any other city in the world—a fact indicated by one of the official notices reproduced on this page.

Fortunately, the Military Governor is splendidly fitted for his task, for he knows the Near East, having been during the past few years in the Egyptian Government service. He knows the oriental mind, and realizes how impossible it is to deal with orientals, without knowing something about their religion and their mode of living and thinking. He is able to speak fluently Arabic, French, Italian, Greek, Eng-

lish, German, and Turkish and is now mastering Hebrew.

During his services in Egypt, Colonel Storrs became very popular with the Moslems—a fact which gave him a good standing in Jerusalem, as the majority

of the population in Palestine are Moslem.

Since the different religious communities in Jerusalem have been quarreling for years, it was not to be expected that they would lay aside their differences the moment the city was taken over by the British. The Governor laughingly told me that he felt that he was dealing with the population in a just way as long as they all kept complaining.

For example, in the morning a deputation of Greek priests would call to protest that the authorities were according special privileges to the Jews or the Moslems; a little later would come a deputation of Latin priests registering a similar complaint against the others; and following them, the Moslem leaders would make their complaints. After these the Jewish rabbis might come to voice their troubles.

The Governor put it aptly when he said that if part of the community quit complaining, he had made up his mind it would be time to change his program, as the satisfied citizens were possibly being shown too much consideration.

In the large public square in the outer city a British military band gives a concert four times a week. At first the band played only three afternoons a week—Thursday, Saturday, and Sunday—but the Grand Mufti, the head of the Moslems, complained, saying: "You are playing for the Jews on Saturday and for the Christians on Sunday, but you don't play for the Mohammedans on Friday." The band now plays on Friday.

34

PUBLIC NOTICE

No person shall demolish, erect, alter, or repair the structure of any building in the City of Jerusalem or its environs within a radius of 2500 metres from the Damascus Gate (Bab-el-Amud) until he has obtained a written permit from the Military Governor.

Any person contravening the orders contained in this proclamation, or any term or terms contained in a license issued to him under this proclamation will be liable upon conviction to a fine not exceeding L. Eg. 200.

R. STORRS

Colonel

Military Governor.

Jerusalem, 8th April 1918

AVIS

Personne n'est autorisé à démolir, construire, changer ou modifier n'importe quel bâtiment dans sa structure à Jérusalem ou dans ses environs sur un rayon de 2500 mètres partant de la porte de Damas, (Bab-el-Amud) sans avoir obtenu un permis écrit du Gouverneur Militaire.

Toute personne contrevenant, soit aux ordres contenus dans cette proclamation, soit à la teneur du permis octroyé, s'exposera après condamnation, à une amende ne dépassant pas L. Eg. 200.

Le Gouverneur Militaire

R. STORRS

Colonel

Jérusalem, le 8 Avril 1918

إعلان

لا يجوز لأي شخص أن يدمر أي بناء كان في مدينة القدس أو جوارها ضمن دائرة مساحتها ٢٥٠٠ متر ابتداءً من باب العمود (الأمود) حتى يتبعها أو يغير هيئته البنية القديمة أو يجمعه قبل أن يحصل على رخصة خطية من سلطة الحاكم العسكري.

كل شخص يخالف هذه الأوامر أو أي شرط من الشروط الواردة في الرخصة التي تعطى له طبقاً لهذا الإعلان يمرض نفسه بعد عاينه وتثبيت الحزم عليه إلى جزاء لا يجاوز الاثنين جنيه.

الحاكم العسكري

ميجور جنرال

القدس الشريف في ٨ نيسان سنة ١٩١٨

سنورس

מודעה רשמית.

שום אדם לא ירצה, יסלק, יעלה או יתכן הנהלה כל בנין בירושלים או בסביבותיה בתוך קוטר של 2500 מטר מסביב שער (באב אל עמוד) עד שיקבל רשות בכתב מהמפקד הצבאי. כל אדם אשר יפרז על התקנות אשר בפרטן נהגה או על אשר מפקדו הישן אשר יסמן לו להטות בהפרזה, יחלף לקנס שלא יעלה על סכום של 200 ליש"ט.

ירושלים 8 אפריל 1918.

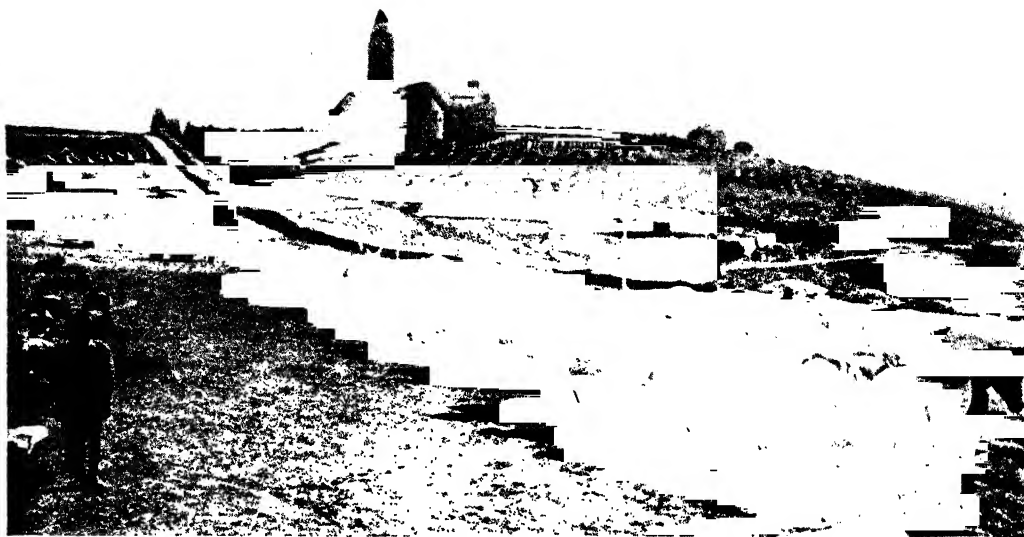
קולונל

ד. שטורס.

(הממשל הצבאי)

Photograph from C. W. Whitehair

ONE OF THE FOUR-LANGUAGE PROCLAMATIONS POSTED
IN JERUSALEM BY THE BRITISH



BRITISH HORSES TETHERED AT THE FOOT OF THE MOUNT OF OLIVES: THE KAISERIN AUGUSTA VICTORIA HOSPICE CROWNS THE HEIGHT (SEE TEXT, PAGE 332)



Photographs from C. W. Whitehair

BRITISH OBSERVATION POST IN THE INDIAN HILLS ON THE DAMASCUS ROAD

The rapidity with which the British troops completed the conquest of Palestine and Syria during the closing weeks of the world war constituted one of the most brilliant strategic campaigns of history. Much of the success of the great "push" was due to the excellence of the observers both on the ground and in the air.



A RESERVOIR BETWEEN THE PONTIUS PILATE TANK AND JERUSALEM

The capacity of this basin is 350,000 gallons. The tank begun by Pontius Pilate was not completed in ancient times because the Roman Government frowned upon the heavy cost of the proposed water system. The British, however, immediately following their occupation of the Holy City, began the restoration and completion of the tank, which has a capacity of 5,000,000 gallons and is fed by a perennial spring.



Photographs from C. W. Whitehair

COURTYARD OF THE COPT INN: JERUSALEM

This inn marks the northern boundary of the Patriarch's Pool, an artificial reservoir which is said to have been constructed by King Hezekiah



© International Film Service

FRENCH PILGRIMS CARRYING A HUGE CROSS INTO THE CHURCH OF THE
HOLY SEPULCHRE

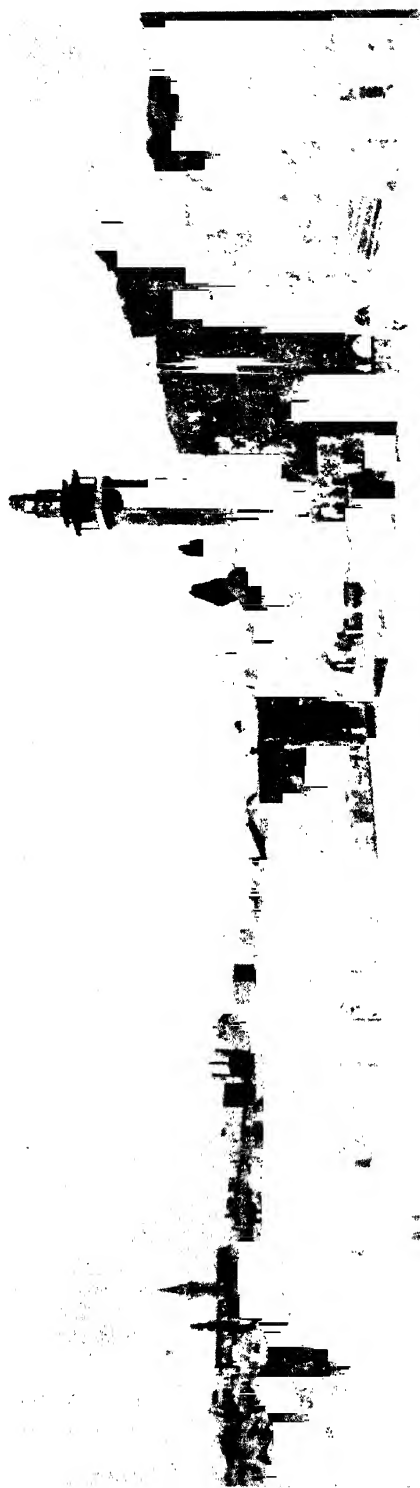
This edifice is one of the most sacred shrines in all Christendom. Every year in times of peace thousands of Americans join in the pilgrimage of peoples who wend their ceaseless way to this historic spot.



© International Film Service

THE ANCIENT CEREMONY OF "WASHING THE FEET" BY THE GREEK PATRIARCH ON
THURSDAY BEFORE EASTER IN FRONT OF THE CHURCH OF
THE HOLY SEPULCHRE: JERUSALEM

This particular scene was enacted in the Holy City some time prior to the rescue of Palestine by the British. Note the preponderance of the Turkish fez in the crowd of on-lookers.



Photograph by Earle Harrison

THE NORTHEAST CORNER OF THE TEMPLE INCLOSURE: JERUSALEM

"The most beautiful place in all Jerusalem is Haram-esh-Sherif, 'the Place of the Temple.' This area, which is surrounded by a wall, is the site of Solomon's magnificent Temple. It was a sacred spot even before King David placed his altar there." The native at the left of the picture is standing above what were once King Solomon's stables.

A public reading room has been opened in the public garden, in which the daily news telegrams are posted in English, French, Arabic, and Hebrew, and newspapers in various languages are provided.

Football teams have been organized among the boys of the city, under a special coach selected by the military. Public entertainments of all sorts are provided, and great care is taken to see that the heads of all the different religious communities are invited.

Without question, the greatest achievement of the British régime has been the bringing of water to the city. Before the British occupation the only water in Jerusalem was that which was collected during the rainy season in the dirty cisterns throughout the city and that which was peddled in goatskin water-bags on the backs of men and donkeys.

The reservoirs or cisterns are from twenty to thirty feet square and are so constructed that the water from the buildings and streets flows into them during the rainy season. As sanitation in the past has been unknown in the city, the condition of these cisterns can be imagined, for no precaution was taken to prevent the filth and dirt of the streets from flowing in with the water.

Water has always been the most precious thing in Palestine, and particularly in Jerusalem. Although the Turks ruled the city for more than four hundred years, they had never provided an adequate water supply. Within five months after the arrival of the British 320,000 gallons of water were being piped into the city daily.

About 15 miles from Jerusalem, out beyond Bethlehem, on the Hebron road, was a great tank begun by Pontius Pilate to supply water to the city. We are told that the expense was so great that when the Roman Government learned of it the work was stopped at once and was never completed. The tank and an aqueduct from an ever-flowing spring to the tank have been restored, and the water is now brought to Jerusalem through a six-inch pipe. The tank holds about 5,000,000 gallons, and insures a steady supply.

PLANNING FOR THE CITY'S FUTURE

Realizing that under a just and honest administration Jerusalem is likely to have

a large increase in population, a general plan has been drawn up for the immediate future. This plan provides for modern extensions beyond the walled area and contemplates a more practical style of architecture, which will, however, harmonize with the buildings of the ancient city.

As an old jewel must be properly set, so as to bring out all its luster, so will old Jerusalem stand out on the top of the hill, unspoiled by modern hand, towering alone in all her ancient beauty.

Much of the oriental charm of the old city is due to the dark, narrow, winding streets, resounding with the babble of many tongues and teeming with endless streams of people gathered out of every nation under heaven.

Many of the streets are ill paved and end in blind alleys. A number of them run under and through buildings and are lighted by oil lamps. No ray of sunshine or fresh air penetrates these dark passageways.

Often it is necessary to crouch against the wall to let the camels and donkeys, in charge of their yelling Moslem drivers, get by. One who has made the trip from Jaffa to Jerusalem at night by motor-car can never forget the sights and sounds of the almost endless train of grumbling, groaning camels, with donkeys occasionally interspersed, all loaded with vegetables and fruit, creeping up to Jerusalem for the morning market.

PILGRIMS FROM ALL LANDS

In Jerusalem we see the pilgrims from all countries, who have come to end their days in the sacred city. Jews are seen by the thousands, in their long, thin robes, which look like dusters, all with wide-brimmed hats, much like those worn by the Quakers in their early days in America.

Mingling with the crowds are Greek, Latin, and Armenian priests in bare feet or wearing sandals, and here and there are the sisters from the numberless convents. The Moslem women go hurrying through the streets, with faces completely hidden by long veils. Armenians, Arabs, and Europeans are all rubbing shoulders in the little winding streets.

As I went about the city the variety of putrid smells and the dirty, begging pop-

ulation detracted much from the charm of the scene and made it difficult to realize that this to millions of people is the most sacred spot in all the world.

The Church of the Holy Sepulchre is a very interesting place, being remarkable for the number of supposedly historic spots in so small an area. Not far from the reputed sepulchre is the Stone of Atonement, where the body of Christ is said to have been prepared for burial. A few feet away is a hole in which the cross is said to have been placed, with two holes beside it for the crosses of the two thieves crucified at the same time, and in another room a star is inlaid in the floor to mark the burial place of Adam.

Millions of people journey to Jerusalem to see these sacred places. An American tourist once remarked that this church is like an American department store—everything under one roof.

The most beautiful place in all Jerusalem is Haram-esh-Sherif, "the Place of the Temple." This area, which is surrounded by a wall, is the site of Solomon's magnificent temple. It was a sacred spot even before King David placed his altar there.

In the center is the glittering Mosque of Omar, one of the richest in the world. It is built over a great rock, the Holy Rock, beneath which, according to the Moslems, is "The Well of Souls," where the spirits of all the Moslem dead assemble twice a week to pray. Mohammed himself once declared that one prayer here is worth a thousand elsewhere.

The rock is 59 feet long and 44 feet wide. Upon it the old Israelites made their burnt offerings, and in the middle ages the Crusaders erected an altar. On this rock Abraham is supposed to have built the altar on which to sacrifice his son Isaac. Beneath it is a small cavern about 15 feet square, in which some people believe that Masonry was first instituted by King Solomon.

Shortly after the capture of Jerusalem a group of New Zealand Masons, by liberal gratuities to the sheik in charge of the mosque, secured permission to enter this mystical chamber, and there 32 of them, representing 27 different lodges, held a Masonic meeting. The old sheik acted as door-keeper and protected the meeting from intruders. Throughout the

world of Masonry in modern times, no other worshipful master has opened his lodge in quite such historic surroundings.

Jericho has nearly disappeared from the map; today it is a little village of only a few dirty, dismal hovels, not worthy of being called houses, in which live some three hundred wretched creatures.

However, from the little village, at the break of day, there is unfolded to the eye of the traveler one of the most remarkable historic panoramas in all the world. Across the Jordan to the east the sun shoots its rays over the heights of Moab. It was from one of those lofty mountains that Moses, after forty years of wandering and waiting, gazed longingly upon the Land of Promise, which he was destined never to enter.

To the south, between the mountains of Moab and the Judean Hills, nestles the Dead Sea, upon whose sluggish waters there now floats the smallest fighting squadron of the great British navy.

To the northwest lies the Mountain of Temptation, where Christ is reputed to have spent His forty days and nights of fasting.

To the west, silhouetted against the sky-line, looms the tower of the German hospice upon the Mount of Olives.

IS THE JEW'S DREAM TO BE REALIZED?

One of the spots best known to tourists in Jerusalem is "The Wailing Place of the Jews," a portion of the old wall erected by David, where for hundreds of years countless thousands have gathered to pray for the restoration of their kingdom. At last it looks as if their dream would become a reality. Mr. Arthur James Balfour, Great Britain's Secretary of State for Foreign Affairs, has written as follows on this subject:

"His Majesty's Government view with favor the establishment in Palestine of a national home for the Jewish people, and will use their best endeavors to facilitate the achievement of this object, it being clearly understood that nothing shall be done which shall prejudice the civil and religious rights of existing non-Jewish communities in Palestine or the rights and political status enjoyed by Jews in any other country."

A part of this plan was the establishment of a great Hebrew university, and



Photograph from C. W. Whitehair

THE WAILING PLACE OF THE JEWS: JERUSALEM

"May the kingdom soon return to Zion! Comfort those who mourn over Jerusalem. May peace and joy abide with Zion, and the Branch of Jesse spring up at Jerusalem." Thus runs the litany of the Jews, which for centuries has been recited in this place. Today the never-ending prayers of an exiled people are about to be answered.

I was fortunate to be in Jerusalem at the time of the laying of the corner-stone of this institution. The day marked the dawn of a new epoch in the history of the Jewish people.

The site of the university is on Mount Scopus, across the Kidron River from the city and north of the Mount of Olives. On the day of the ceremony the crowds began leaving the gates of the city in the early afternoon. Most of them were walking because they were too poor to ride. Besides, when the Turks left Jerusalem they swept the city clean of carriages, wagons, and horses.

But one forgot the poverty of the multitude when he caught their spirit, for over them hung an atmosphere of hope and expectancy. They were happy, and well they might be, for a new day was beginning for all of them, and surely no race has suffered longer or more intensely than the Jews.

With heads high the multitudes sang their hosannas and hallelujahs. The laying of the corner-stone was marked by simplicity and dignity. The actual building of the university will be delayed until after the close of the war.

It now looks as if, after nearly two thousand years of exile, the Jews will return to claim a home in the land of their forefathers. Even under the unjust Turkish rule, the Zionists had established 45 or 50 settlements, and any one who doubts their ability to colonize has only to visit some of these villages.

The houses are better built than those of the ordinary Palestine village. The streets are clean and the farms are most creditable. The colonists have greatly increased the annual harvest of the acres they cultivate, and have demonstrated that Palestine has large agricultural possibilities.

The territory of Palestine is about one-

sixth the size of England, and before the war had a population that has been estimated at about seven hundred thousand.

Due to the unjust Turkish rule of the past four hundred years, the population is in a wretched condition. Four years of war have devastated the land beyond belief.

Under a capable government, it is believed that Palestine can support a population running into the millions, but large sections of the country are now almost completely depopulated.

THE TORTURES OF WARFARE IN THE JORDAN VALLEY

The Jordan Valley today lies practically uncultivated. In earlier periods the valley was well tilled and produced large crops. With a proper system of irrigation, no part of Palestine would yield more bountiful harvests, for the soil is fertile and the climate is subtropical.

At the same time, there is no part of Palestine where the British troops have suffered more severely than in the Jordan Valley. During the summer the dust and heat are terrific. The thermometer goes booming up toward 120° to 130° F., while the dust is suffocating, in many places being over a foot deep, not alone on the road, but over the valley. It is as fine and foamy as the finest wheat flour, and rises in great clouds as the motor plows through. So completely does it hover over the car as it is stirred up, that time after time the occupant of the back seat cannot see the windshield. The motor drivers are often forced to stop to find their way, as the blinding, baffling clouds roll about them.

BRITISH FOUGHT FOR ALL CHRISTIANITY

Just how the problem of government will be worked out is a question for the Allies to settle; for, of course, the country will need to be so handled that Jerusalem will be kept not for the Jews only, but for all peoples.

It is wrong to speak of Palestine as the national home of the Jews alone, for the native Christian can make the same claim.

It seems that General Allenby has taken a very sane view of the problems involved. He insists that he is not commanding a British army, but is in command of a detachment of the Allies, and

so strongly does he feel this that I was prompted to say: "You must realize that in all your force in Palestine there are possibly only a few hundred French and Italian troops, and in all of your fighting here in Palestine, so far as I can learn, there has not been one single soldier who has given up his life who was not a Britisher."

He replied: "Possibly that is true, but you must remember that while all of the men under me have been British soldiers, yet that is merely an incident; for the men who were fighting here might have been used on the Western Front. The other Allies have used their men there, and this is as much a part of the Allied show as is France, and I am carrying forward the campaign on the basis that the future of Palestine should be left to the Allies to settle, the same as in other conquered territory. However, I am, of course, trying so to administer the country that it can be handed over in the best possible condition to whomsoever it is entrusted after the war."

As I went from one part of Palestine to the other, and rubbed shoulders with the Indians, the Australians, the New Zealanders, the Scottish, and English troops, and talked with these men and their commanding officers, I came to see the secret underlying the success of the Palestine campaign. This success is evolved from the dynamic personality of one of the greatest military leaders of the war, General Edmund Henry Hyman Allenby.

He has inspired confidence and trust in every man of his command. From his highest general down to his most humble private, there is a reliance in his leadership which knows and looks only for success.

The recent capture of Damascus stands out as one of the brilliant military achievements of the war. In spite of the mountainous country between Jerusalem and Damascus, the British forces were moved forward so rapidly and with such strategic skill that practically the entire Turkish army opposing them was captured.

Palestine today is beginning a new chapter of her history, which is entirely due to the courageous and wise administration of her British liberators.

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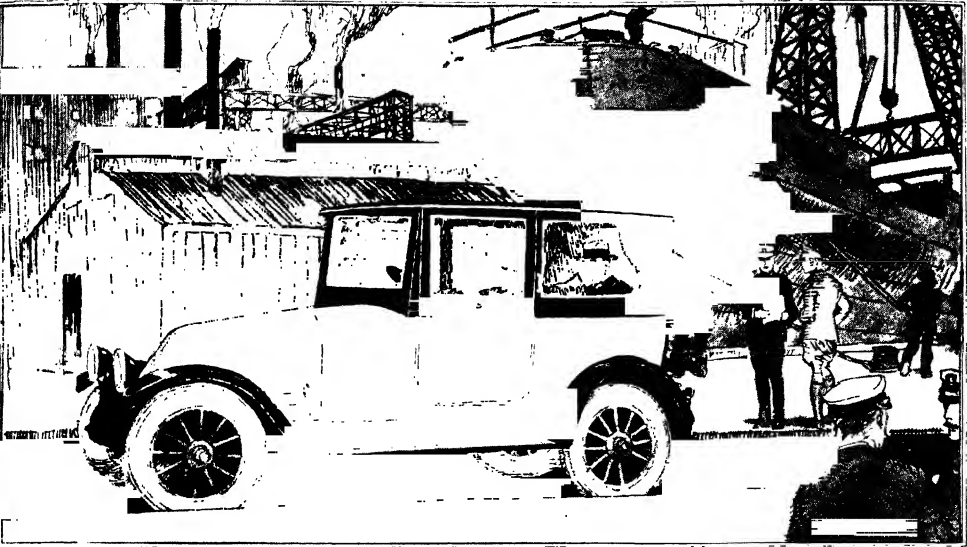
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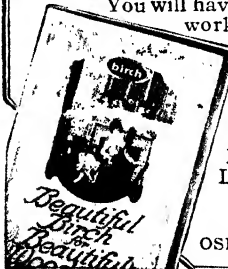


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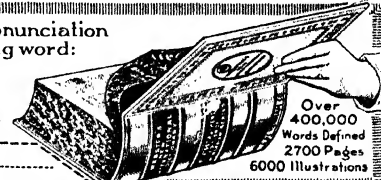
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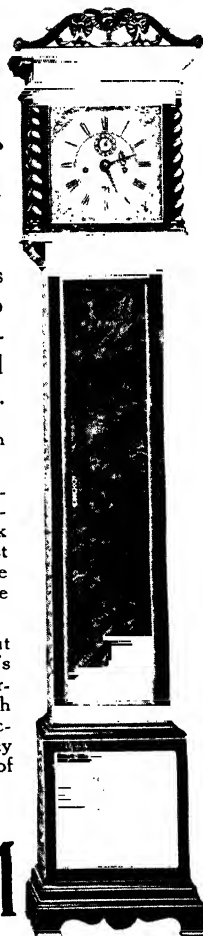
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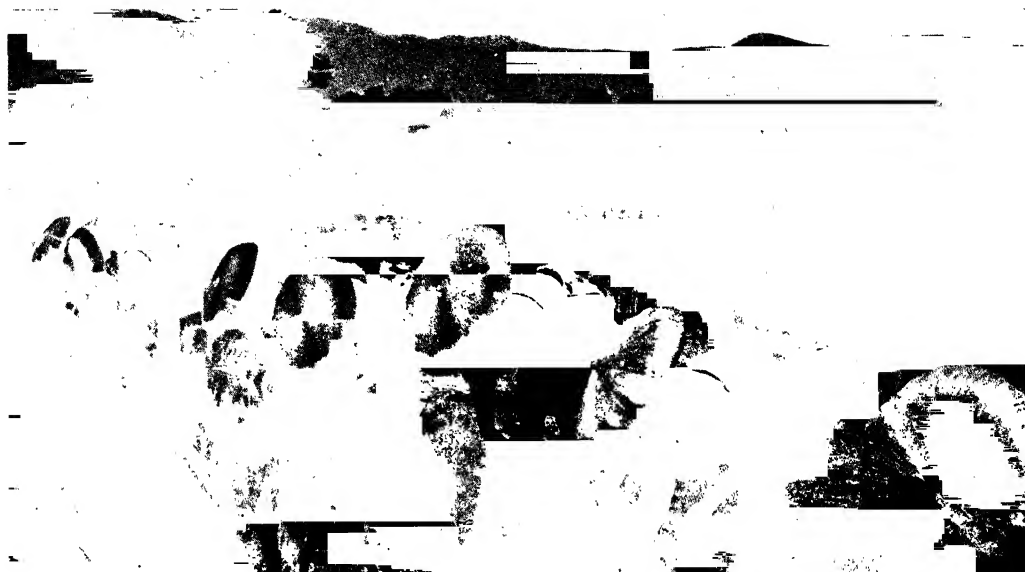
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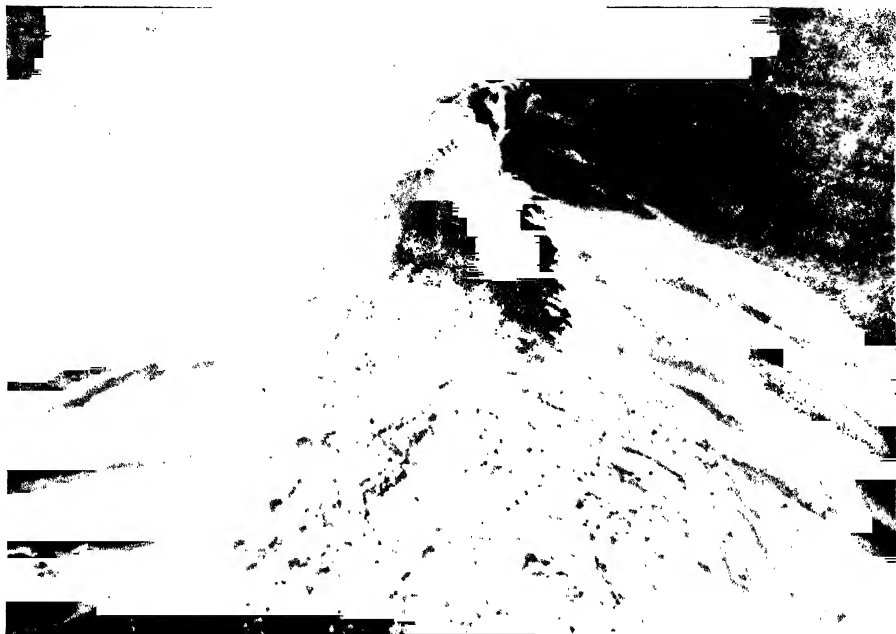
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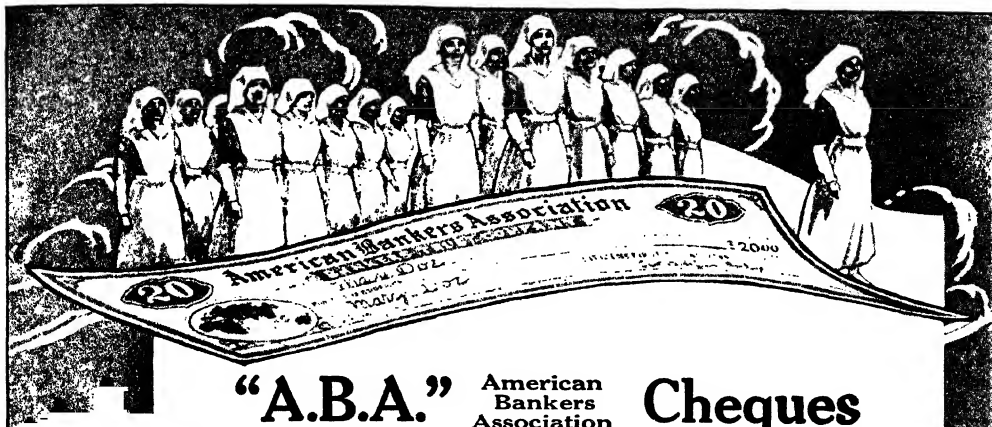
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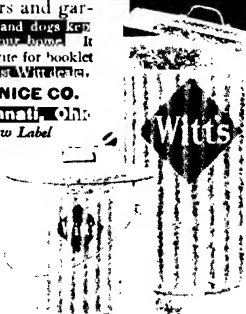
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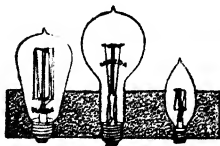
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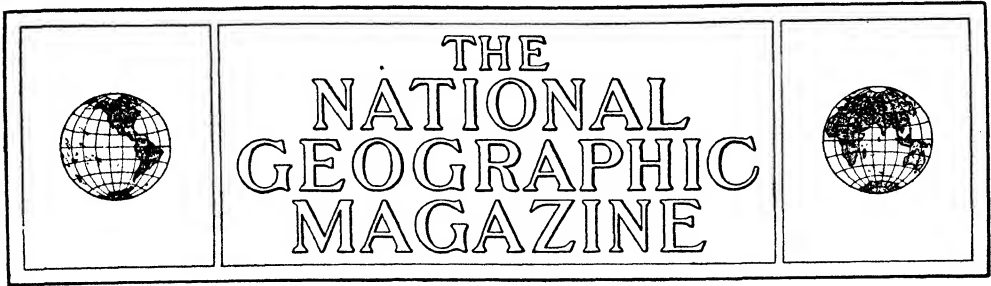
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OUR FRIENDS, THE FRENCH

An Appraisal of the Traits and Temperament of the Citizens of Our Sister Republic

BY CARL HOLLIDAY

DEAN OF THE UNIVERSITY OF TOLEDO, OHIO

WHAT manner of men are these French with whom our soldiers have been fighting side by side?

To many an American a Frenchman has long meant simply an elegantly dressed gentleman with a waxed mustache, a multitude of gestures, a shoulder that automatically shrugs, and a heart that is very susceptible to feminine charms; but during the last four years the average American has been revising his opinions of this citizen of the most civilized country on the globe and is now asking in amazement, "Can this dainty gentleman that I considered super-refined, romantic, sentimental, and effete be the hero who has held at bay the most ruthless nation in the history of man?"

Even so. This same gentleman, so different in his entire composition from those rugged, home-spun characters that we have produced—and admired—in America, is now the marvel of the world.

The French have proved to us, what we have long been unwilling to admit, that a man may be artistic and at the same time brave; that he may love finery and at the proper time fire a shot from a mudhole in the trenches that is heard around the world; that he may spend hours talking about art and belles-lettres and, when the call comes, march into a man-made hell and calmly lay down his

life for his country. In short, we Americans have learned from the French that a man may possess all the refining effects of culture and at the same moment be a hero.

It is a wholesome lesson for us to learn that boastful swaggering and impolite aggressiveness and lack of consideration for the subtle, dainty refinements of civilized society are not necessarily related to strength, endurance, and heroism.

THE UNIQUE FRENCH TEMPERAMENT

The French temperament is unique; it is social champagne. A people full of tender feeling, they are not in the least averse to a public demonstration of emotion.

While the English and the American hide such sentiment with a certain appearance of stoicism, this unabashed people expresses itself frankly and publicly with kisses, embraces, tears, and an amazing flood of vivid words.

A school-boy when leaving his mother at the door as he departs for school receives more attention, hugs, warnings, and tokens of affection than would a Seattle boy starting for New York.

A family gathering or separating at a French railway station is an occasion as full of tears and cheek-kissing and pro-



Photograph by H. C. Ellis

A MASTERPIECE OF CULINARY ART: PHOTOGRAPHED IN THE KITCHEN OF A FAMOUS
PARIS RESTAURANT

The Paris chef takes as great pride in such a piece de resistance as does the sculptor in his less perishable creation. The scientific cook has stood the French people in good stead during the past four and a half years, for he has brought all his skill into play in making palatable the most meager of rations.

longed embraces as that of an American bride leaving her fond mama, while the collision of two automobiles is an opportunity for oratory surpassing anything heard in America. And yet these are the people who said at Verdun, "They shall not pass!"

But an American must not take this French volatility too seriously. It is doubtful whether in the history of man the world has possessed a more good-natured, more patient people.

Contrary to foreign opinion, these French have almost infinite patience. In fact, their very patience with lax public administration and wrong legislation has sometimes been their undoing, and only on rare occasions and at long intervals, as in the French Revolution, will they be provoked into violent bursting of unjust restraints. But when they do, one is lia-

ble to recall the ancient warning, "Beware of the fury of a patient man."

Owing to their extreme intellectual alertness, they seem to us more silent folk forever arguing or scolding; but it is only that same energy transmuted into language rather than into the wasted physical action so often seen in America. That they are a people of exceptionally good disposition is proved by the fact that so few genuine physical clashes result from the veritable fusillade of argument that they constantly fire at one another.

"NO PEOPLE ENJOY THEMSELVES MORE
THOROUGHLY"

Long ago Goldsmith pointed out that the French were the only people who could be happy while starving, and a modern writer, Barker, in his *France of the French*, has declared: "No people en-



Photograph by Ethel MacMurray

THE SPIRIT OF FRANCE

These men typify in their cheerfulness and readiness one of the national characteristics which made them invincible in the face of almost overwhelming odds of men and artillery in the first onrush of the Huns.



GENERAL VIEW OF LE PUY, DEPARTMENT OF AUVERGNE, SHOWING THE CATHEDRAL ON THE RIGHT, THE ROCK OF THE VIRGIN IN THE CENTER, AND NOTRE DAME D'AIGUILLE ON THE LEFT

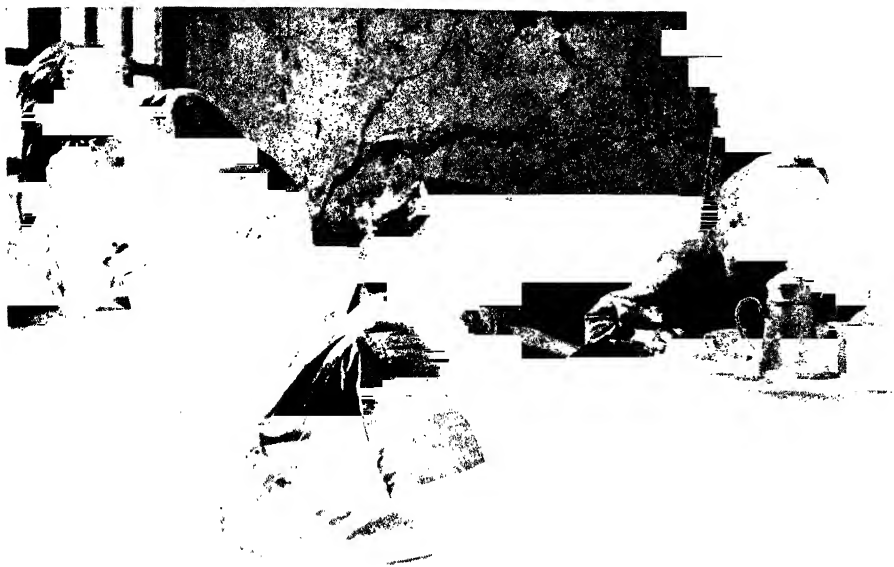
The cathedral is an eleventh-twelfth century structure rising to a height of 435 feet. The Church of St. Etienne, the twelfth century. Before the war 90,000 w

office of rare architectural interest. Mount Anis, the eminence in the center of the picture, is a volcanic rock rising to a height of 435 feet. The Church of St. Etienne, the twelfth century. Before the war 90,000 w

French at Sebastopol. The Church of St. Etienne, the twelfth century. Before the war 90,000 w

l'Aiguilhe, which surmounts the smaller pinnacle to the left, is a curious structure dating from the twelfth century. Before the war 90,000 w

ere employed in lacemaking in the district of which Le Puy is the capital.



OVER THE COFFEE CUPS IN NORTHERN FRANCE

"It was the French woman's faith in small savings that rescued her country after the war of 1870, when vast horded wealth was willingly brought forth to pay the enormous national debt, and the same faith made it possible for France to preserve herself and the world during the world war."

joy themselves more thoroughly while they are about it."

Frugal, almost parsimonious, in their spending of a sou, how do they obtain all this pleasure? Our American conception of a good time, I fear, too often consists in spending a huge amount of money, in rushing madly hither and thither from this theater to that, from roof garden to summer resort, from ball to masquerade.

Your Frenchman, however, has a totally different conception of a good time. To him the society of his fellow-men is a source of exquisite and eternal pleasure.

Belonging to a people of infinite social capacity, a people in whom the social instinct is inherent and ancient, he has made fellowship an art of which he alone is the master. "Since there has been a France at all," says Brownell in his *French Traits*, "France has embodied the social instinct."

To neglect the art of making friends, of making oneself agreeable to those one

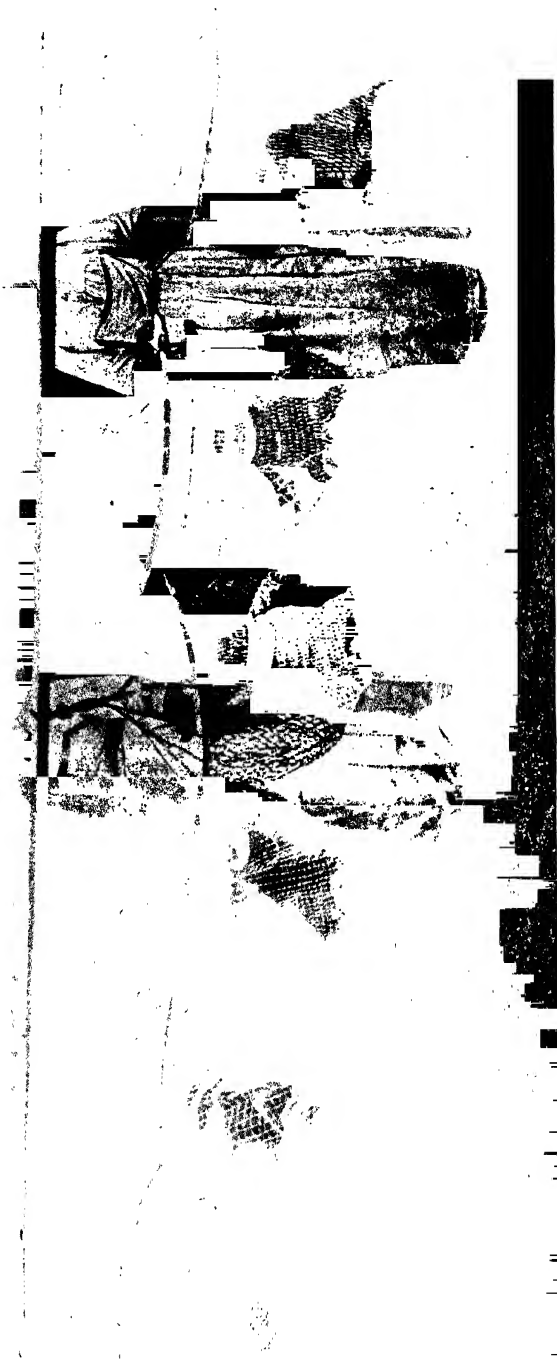
meets, of making oneself nothing short of charming as a conversationalist, is to a Frenchman nothing short of domestic, commercial, and political suicide.

In short, the French have long since learned, what we Americans are simply beginning to learn, that social accomplishments should be purposely and purposefully exercised, and are a valuable part of life's equipment for the truly successful man.

LENDING GRACE TO THE HARDSHIPS OF LIFE

How adaptable is this social quality of the French! How it makes pleasant the rough road of life! It lends a personal grace not only to the necessities, but even to the very hardships, of life.

During this war I have taken dinner in French families where the bread was distressingly scarce and pitifully poor, the sugar limited to one cube per individual, butter entirely absent, and the quantity



Photograph by H. C. Ellis

THE PUBLIC NURSERY, WHERE BABY IS CARED FOR WHILE MOTHER WORKS IN A GOVERNMENT FACTORY

In France, as in every other country, the war is necessitating a great readjustment of economic life to accommodate conditions to the advent of woman in the industrial activities of the nation. Following her four and a half years of labor during the war, the French woman, no less than her British sister, has proved her right to economic independence.



Photograph by H. C. Ellis

BOOK STALLS ALONG THE SEINE: THE BOOKWORM'S PARADISE

"In the Frenchman we find an unusual love of philosophy and a certain worship of reason which are rather discouraging to us more loosely thinking, more sentimental, Americans. The Frenchman, even of the lower middle classes, is always searching for a reason, an explanation, a more thorough understanding of this and that."

of meat so small that only the national optimism could magnify it into a square meal, and yet the *bon mot* flourished upon this very poverty of food. It simply means that the Frenchman has learned to enjoy life independent of all circumstances, and whether in city or in trench he is still the man of society.

Near the battle fronts the American soldiers at meal time snatch up their mess kits, rush to the camp kitchen, hastily swallow their food with scarcely a word, and go about their business; but the French seat themselves with some ceremony, take an hour or more to eat their small ration, and meanwhile discuss with precision, energy, and lively wit a multitude of subjects.

WHERE THE FRENCH BECOME RETICENT

And yet, contrary to the common American opinion, the Frenchman is not

at all effusive about his *personal* affairs. On philosophy, art, and literature he will debate with you with titanic energy, but attempt to divert the conversation into matters domestic or personal and you will find the talk suddenly languishing.

In other words, your Frenchman is not a believer in a "shameless exposure of spiritual nudity." His personal, domestic, and spiritual life are not for public or incidental discussion, and, though you may know him for years and spend a multitude of hours with him in the most stimulating conversations of your life, still you feel that you do not and probably cannot ever know his inner life.

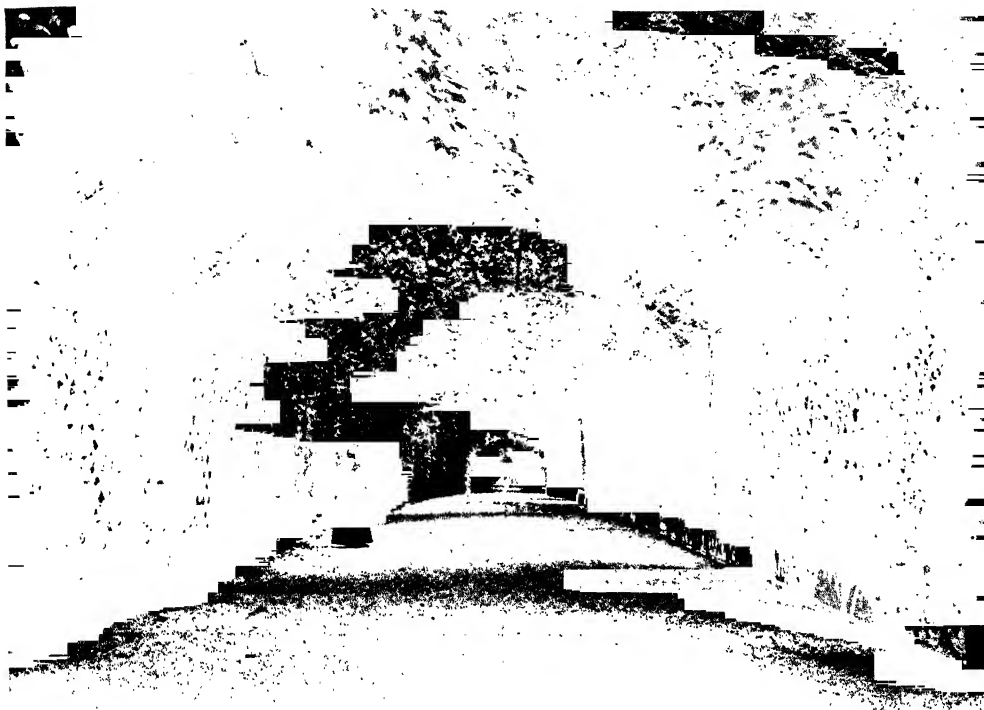
He can have the most unselfish enthusiasm for your success; without a trace of jealousy he will wildly applaud the successful feats of his colleague in university, laboratory, or court; but never does he open his heart to you or that col-



Photograph by H. C. Ellis

THE ORNATE INTERIOR OF A GREAT PARIS DEPARTMENT STORE: IN COMMERCE, AS IN EVERY OTHER ACTIVITY OF LIFE, THE FRENCH MAN'S LOVE OF BEAUTY IS MANIFEST

The floral decorations seen here agree with the poetical name of this particular store, "Au Printemps" (In the Springtime)



Photograph by H. C. Ellis

A TRELLIS BUILT BY NAPOLEON I FOR HIS EMPRESS, MARIE LOUISE: COMPIEGNE

Like the Babylonian monarch who erected the famous Hanging Gardens to delight the eye of his princess, who amid the flat plains of Mesopotamia pined for her mountain home, so the first Bonaparte built this beautiful arbor to remind his homesick Austrian princess of her favorite trellis at Schonbrunn.

league concerning the troubles or the happiness about his hearthstone or the relationships existing behind the closed doors of his family residence.

What the Frenchman lacks, however, in talkativeness about his personal affairs he more than compensates for in his startling loquacity on things of a general nature; for in France intelligence is universal.

This does not mean that every Frenchman is well educated; it does not mean that he is widely traveled, but it does mean that mentally he is generally on tip-toes. As far as city and town life is concerned, it has been truly observed that "the sensation which France produces on the impressionable foreigner is, first of all, that of mental exhilaration."

And, be it remembered, this intellectual enthusiasm must not be classified as loose thinking. The French are astonishingly precise. Their intellectual precision is

such that I am afraid it discourages their imagination. I cannot imagine a Parisian of the cultivated class indulging before his fireplace in those loose, wandering dreams in which so many Americans delight.

INTELLECTUAL CANDOR A NATIONAL TRAIT

Intimately connected with this attitude is the Frenchman's intellectual candor. Long accused by the Americans and the British of lacking this very quality simply because he does not make a public dissection of his personal inner life, he possesses, I believe, far greater intellectual frankness than either of his two allies, when dealing with the deeper problems of existence.

If he is an atheist, he is frankly one; if he is a believer in the necessity of some supposedly immoral tendency in man-



Photograph by H. C. Ellis

A WARD FOR THE CHILDREN OF THE POOR: FRANCE ENDEAVORS TO SAVE EVERY
BABY WITHIN ITS BORDERS

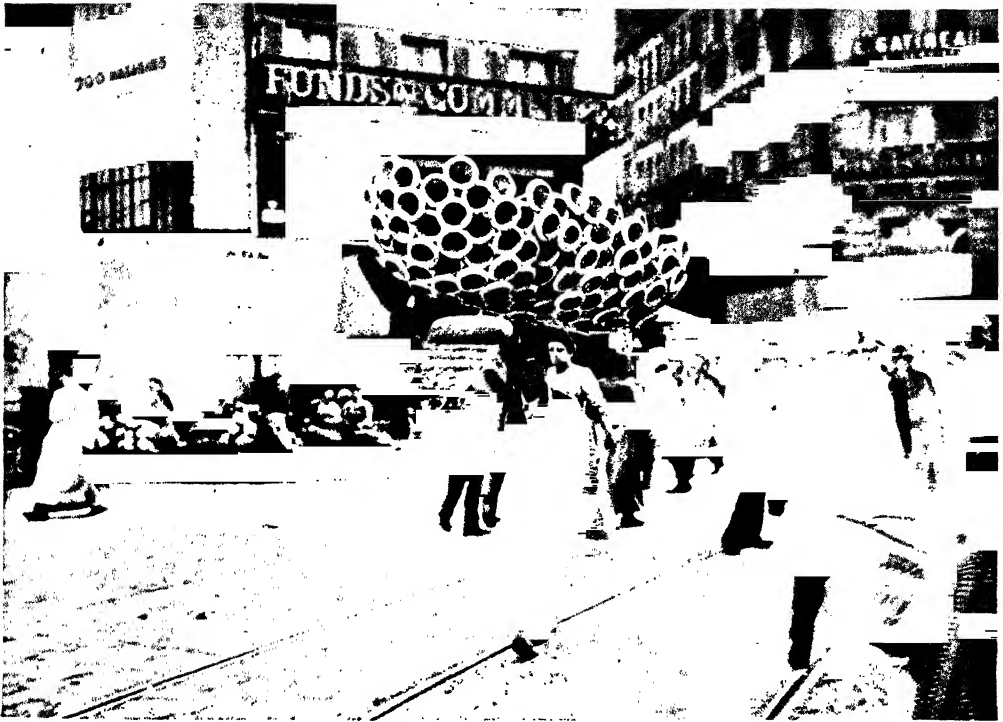
The dowry custom in France has its good points, for it prevents hasty and poverty-ridden marriages; on the other hand, it is bad, for it deters marriage in a land where children are sorely needed and causes the French family to be small, so that the one or two children, when grown, may possess the proper financial attractions for marriage.

kind, he generally says so frankly; if the Trinity is beyond his conception, he does not camouflage his skepticism; unlike many Americans, he accepts few theories on faith, and what he cannot understand or accept he candidly rejects.

In the Frenchman, then, we find an unusual love of philosophy and a certain worship of reason which are rather dis-

couraging to us more loosely thinking, more sentimental, Americans. Perhaps our tendency is to take too many ideas, facts, and things for granted; but the Frenchman, even of the lower middle classes, is always searching for a reason, an explanation, a more thorough understanding of this and that.

If at the table of my French hostess



Photograph by H. C. Ellis

A PERIPATETIC PURVEYOR OF FLYPAPER

He sells it rolled, so that the purchaser will not feel stuck up by his purchase

I inquired as to the origin of some word or the theory of some science, *voilà!* an animated discussion immediately, a sifting of opinions, a peeping into dictionaries and encyclopedias, an astonishing volley of facts, and when the subject is dropped it is because that subject has been perforated, riddled, heartlessly dismembered.

But if it has passed through the dissecting-room its anatomy has forever been made clear to me. In other words, vague, sentimental reflections seem rather distasteful to the twentieth century Frenchman, and his bravery in acknowledging and facing facts might well be imitated to some degree by our own countrymen.

IN THE FRENCH SCHOOLS

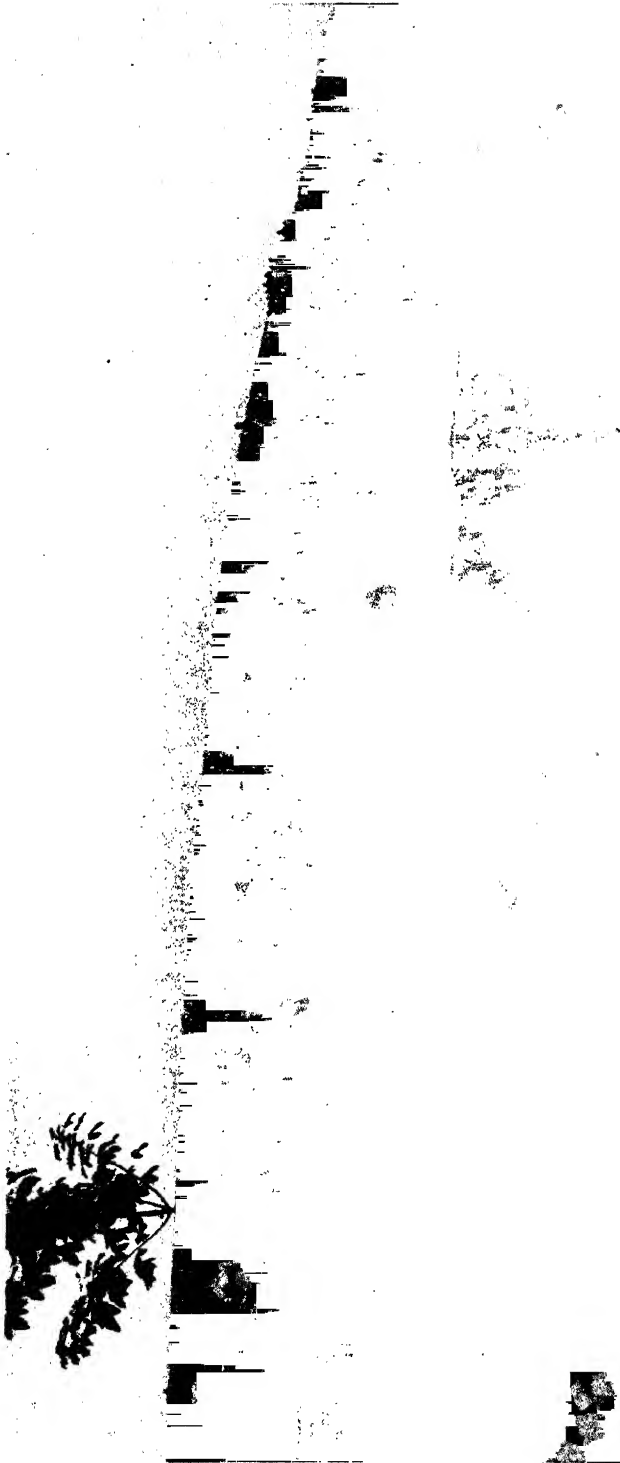
Your Frenchman, from the boy in the lycée to the professor in the university, is sure that complex life can be reduced to a comprehensible system; his tenacity in developing and defending a logical

system worked out from a given definition is wholly admirable.

Indeed, to one who has seen the lackadaisical air of the average American student toward the class-room discussion of some purely abstract idea, this French zeal in defending an intellectual point or theory, this seizing upon an abstraction as a sort of object of faith to be debated upon with enthusiasm, to be battled over if need be, comes as a pleasing shock.

If, therefore, any American still clings to the old-time opinion that the French are a frivolous people he should immediately revise his theory. They are startlingly serious and their very seriousness has led throughout their history to what has been called their tragic antagonism of conviction.

Such intellectual alertness would not allow any people to remain contentedly unanimous, but on the other hand has led to internal hatreds among the French so keen, so heated, that only a common intense patriotism has preserved safety.



Photograph by L. Boulanger

GRAPE GATHERERS AT EPERNAY, CHAMPAGNE DISTRICT

Once the pride of France and the delight of connoisseurs of rare vintages, the fields of Champagne have been blasted by high explosive shells, sprayed with the steel of bursting shrapnel, and poisoned with the fumes of deadly gases. But French thrift will soon restore them, and smiling vineyards will again clothe these hills, concealing forever the scars of war.



Photograph by H. C. Ellis

A STRANGE MIXTURE OF GENIUS: REAL FRENCH DEMOCRACY

Seated, beginning at reader's left: 1. Vanbiel, said to have invented "Rock and Rye"; 2. Madame Rodin, wife of the sculptor; 3. Flammarion, the astronomer; 4. Rodin, the sculptor; 5. Madame Flammarion, wife of the astronomer; 6. Mlle. Chabas, daughter of the French artist and niece of Paul Chabas, painter of "September Morn." Standing, beginning at reader's left: 1. Auberten, one of the most gifted of modern French artists; 2. Mrs. Vanbiel, recently in charge of Loie Fuller's girls, who have been dancing for our soldiers; 3. Madame Auberten, wife of the painter. 5. Loie Fuller; 7. Maurice Chabas, painter, brother of Paul.



Photograph by H. C. Ellis

A GROUP OF ARTISTS IN A BOHEMIAN CAFÉ: PARIS

The poet, Paul Fort (front row, second from the right), has just finished reciting one of his own compositions and seems well satisfied with himself

This worship of reason, this desire for precision and clearness, this regard for method and established procedure, has caused in business and governmental activities a curiously encumbering effect.

The profound faith prevalent in France in ticketing, labeling, and filing has led to what a British observer, Barker, has called "the plague of *petits papiers*." Indeed, he continued, "one is administered in France from the cradle to the grave, and sometime afterwards."

The mass of administrative machinery in many fields is astounding, even to an American, and the French themselves grin sarcastically, but patiently, over the amount of sheets, tickets, tags, and general red tape connected with the most ordinary activities of governmental life.

THEIR REVERENCE FOR CONVENTIONS

Nor is this profound regard for method and established procedure limited to affairs of government; it permeates all so-

ciety and may be seen in the reverent attitude toward conventions and in a sort of social slavery toward petty observances handed down from the remote past. To an American, scornful of traditions, it is almost beyond understanding—this doing a thing generation after generation simply because it has long been the custom to do the thing.

Naturally this close attention to method in daily life causes a reflex action upon all the mental processes of the French. Their constant regard for form and clearness has fostered a genuine passion for arranging, modifying, and combining all things symmetrically.

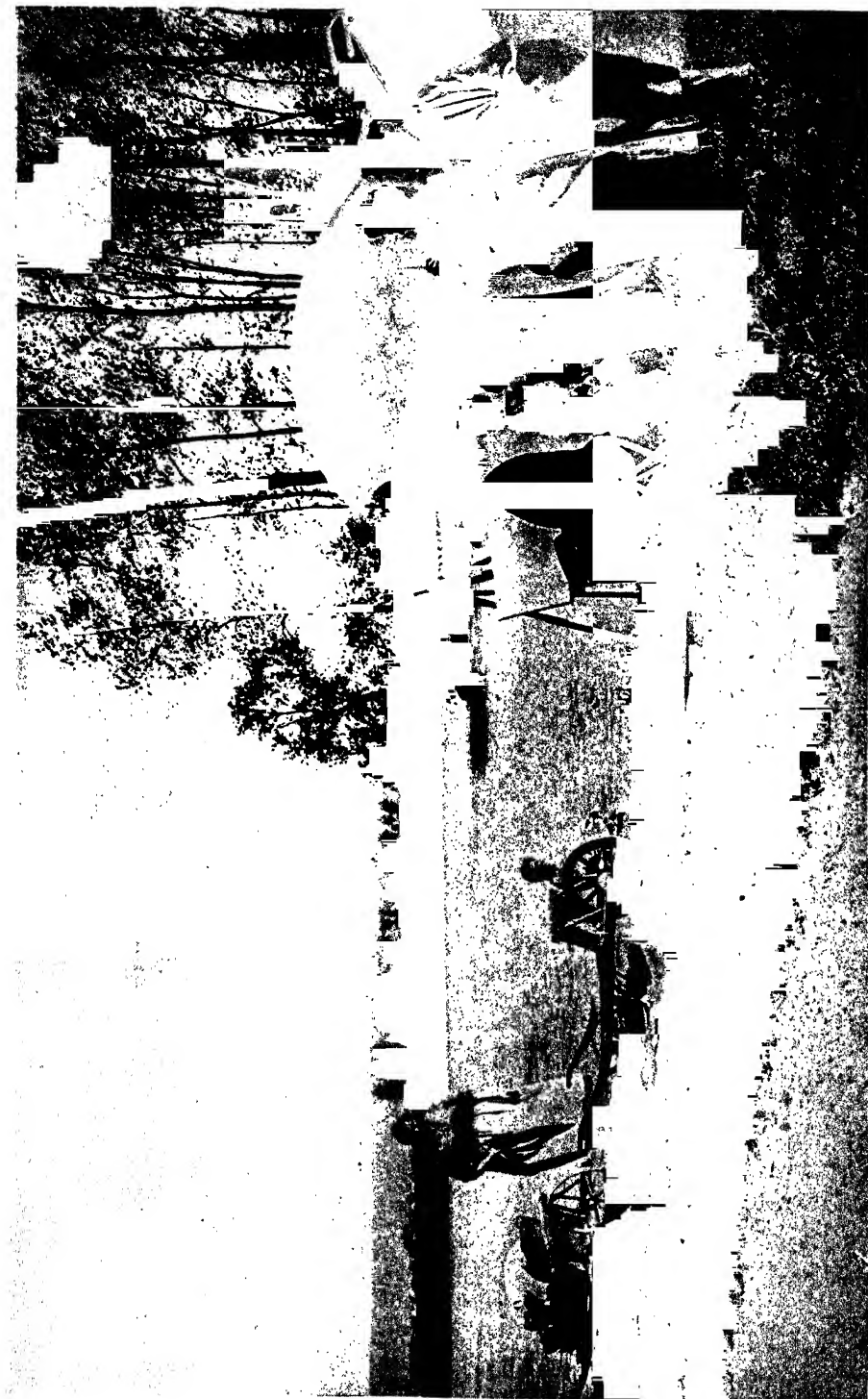
Revealed in their formal gardens, the exact balance found in their architecture and sculpture, their careful attention to exactness in musical counterpoint, and their orderliness in writing, this idea of form impresses itself upon the visitor wherever he turns. The explicitness, the certainty, the conformity to established



Photograph by H. C. Ellis

A FRENCH DESIGNER AND ARTIST: IN SUCH STUDIOS AND FROM SUCH HANDS ORIGINATE THE FASHIONS FOR WHICH ALL WOMANKIND LOOKS TO PARIS

This creator of fashion plates, Caprillo, turned his talents to the production of vivid war posters during the world conflict



Photograph by H. C. Ellis

L'HERMITTE. WITH HIS PEASANT MODELS ABOUT HIM, AS HE PAINTS ON THE BANK OF THE MARNE

"In the older paintings of France there was a decided liking for allegory, or symbolism, notably in the seventeenth and earlier years of the eighteenth century; but today there is a tendency toward the same realism and naturalism as is found in modern French literature"

ideals of fitness—these proclaim the intense sanity of the French mind. *What the French know, they possess.*

The Frenchman is terribly explicit. His exactness, were it not relieved by so many human qualities, would be excessively unsympathetic. The clearness of the language itself, its almost faultless precision, long ago made it the language of diplomacy; its very clarity reflexively conduces toward clearness in thinking.

THE MOTHER OF CRITICS

All this must connote a high degree of critical taste; for every one is constantly guarding against the vague, the unsymmetrical, the inelegant manner of expression; every one is constantly watching for things, ideas, and forms that appeal to the æsthetic nature. The result has naturally been that France is the mother of a majority of the keenest masters of criticism in modern times, not only in literature, but in music, painting, architecture, and sculpture.

If there is such a thing as being too sane, as some of our psychologists warn us, then France's extreme regard for the sanity, the orderliness, the symmetry of life may some day prove dangerous; but at present the wholesome, jovial, almost effervescent nature of these very human people shows little sign of such a peril.

One may expect to find, therefore, in French art a profound regard for what may be called the artistic proprieties—in other words, *style*. To a foreigner, French painting and sculpture may seem to possess more of order and movement than of profound motive.

Edith Wharton has said: "However lofty and beautiful a man's act or his purpose, it gains by being performed with what the French . . . call 'elegance.' . . . They do not care for the raw material of sensation: food must be exquisitely cooked, emotions eloquently expressed, desire emotionally heightened, every experience must be transmuted into terms of beauty before it touches their imagination."

Beauty is unquestionably present in their sculpture, painting, architecture; but whether one finds here the terrific energy, the abandonment, the fine frenzy

seen in some of the work of the Italians is indeed a question.

In fact, French art sometimes seems to be more the fruit of intelligence than of overpowering genius. It is so absolutely finished, so decisively clear, that it leaves perhaps too little to the imagination. It reminds one of the dignified symmetry and grandeur of portions of Milton's *Paradise Lost*, but not of the stormy emotion of the poems of Burns or Byron.

One finds oneself, even in one's admiration for it all, secretly longing for a little irregularity, a touch of the unusual, a flash of the wild abandonment that often thrills one in the primeval wilderness.

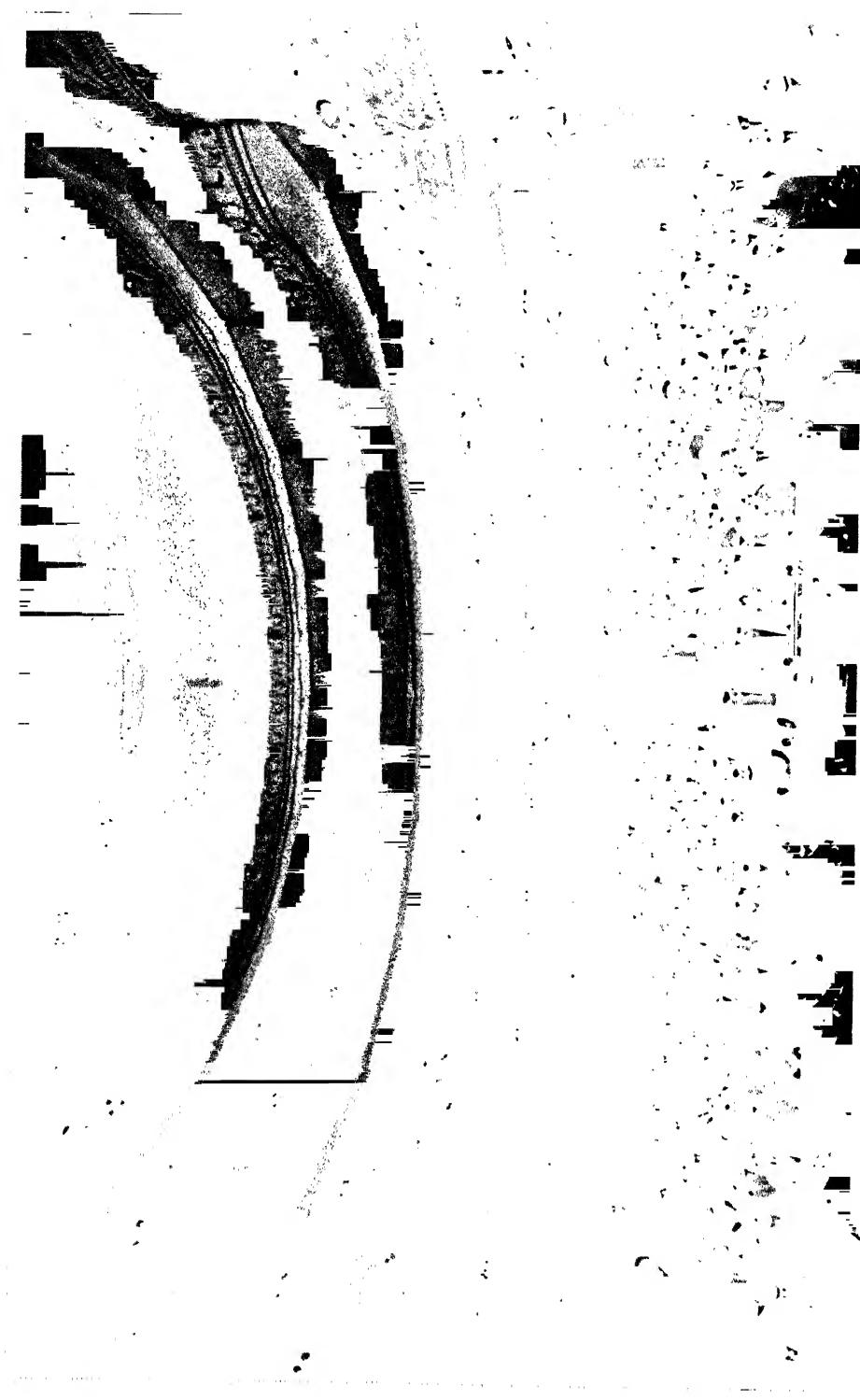
But violence in any form has until very lately been rather repugnant to the French artistic sense—violence in color, line, and contrasts—and symmetry, ideal, restful, eternal symmetry, takes the place of successful audacity.

TRIUMPHS OF FRENCH ART

But in spite of all this, what nation has equaled France in high general level of artistic production? Where may be found her equal in Gothic architecture—her Notre Dame, St. Chapelle, the cathedrals of Rheims and Rouen? Where, too, may be found the rival of Paris in noble modifications of the Greek—the Madeleine, the Pantheon, the Palais Royal, and a score of others?

Repeatedly from the Middle Ages to this present hour the French masters have led Europe in finish and clearness of sculpture. An art lavishly supported from public funds, it has found expression in such marvelous works as Delore's "Triumph of the Republic," Barries' "The First Burials," and Rodin's "The Thinker," "Balzac," and "The Hand of God." In the older paintings of France there was a decided liking for allegory or symbolism, notably in the seventeenth and earlier years of the eighteenth century—it is so apparent in the work of Versailles—but today there is a tendency toward the same realism and naturalism as is found in modern French literature.

I fear that many an American looks upon French art as a thing of general



Photograph by H. C. Ellis

THE FRENCH LOVE THE VARIED PROGRAM OF THE VAUDEVILLE: SCENE IN A PARIS THEATER

The histrionic ability of the French surpasses that of any other people. For them the theater is a great cultural and educational institution, and they support it with public funds in the same spirit that they support their schools.

immoral tone. It may be that our Puritan instinct is shocked by the frequent recurrence of the nude in the paintings of France—as though the human body were something abhorrent and never to be admired among decent people.

But French art is not immoral; it is simply frank. Undoubtedly most of the money gained in Paris from salacious art comes from foreign pockets; for if a Frenchman seeks immorality he spends no money on poor imitations.

To judge French painting as it really is, one has simply to look at such masterpieces as Corot's "Matin," Lorrain's "Village Fête," Millet's "Gleaners," Rosa Bonheur's "Horse Fair," Jules Breton's "Return of the Harvesters," and Monet's "Cathedral of Rouen." The truthfulness, the simple dignity, the exquisite finish, of these painted stories from French life are proof enough that French art is the product of admirable skill and untiring patience.

THE DEBATABLE QUESTION OF FRENCH MUSIC

Many a French singer apparently has the skill, but many an American loses his patience trying to understand French music. In these times it may be heresy to say it, but French music seems to a foreigner to lack the deep emotional and ethical quality of the greater German music; nor has it that positive lyrical quality found in Italian opera.

There has indeed been considerable dispute among critics as to whether there is yet a distinctly national quality in French music. There are large numbers of charming old melodies, but these are provincial, not national.

There are, of course, approaches to national airs in the "Noels," or ancient Christmas songs, while "The Marseillaise" is and will long remain not only a national but an international expression of love of freedom. But all this does not prove the case for French music.

In light opera these people have undoubtedly far surpassed the Germans and the English, but in grand opera we may find constantly cropping out the influence of Italian and German masters. What we Americans miss is the *continued* melody, the completed lyrical composi-

tion, that sings itself in one's ears for days and perhaps months after one has heard the opera. Then, too, to an American the French voice seems rather thin, and even the French themselves will admit that only a few of their greatest singers have been native born.

But it must be remembered that most of the famous singers of the world have looked upon Paris as "home"; for here was the birthplace of such masterly compositions as Bizet's "Carmen," Berlioz's "Damnation of Faust," Thomas' "Mignon," Gounod's "Faust," Massenet's "Manon," and Saint-Saëns' "Samson and Delilah."

THE GLORIES OF THE FRENCH STAGE

One may qualify one's remarks on the music of the Frenchman, but who can overstate the glories of the French stage? "Most French people are born actors"; indeed, their histrionic ability probably surpasses that of all other nations.

Possessing exceptional mobility of feature, vigorous and dramatic gestures, a language so exact as to be almost mathematical, a natural clarity of expression, they have in their very infancy those characteristics for which actors in other lands toil a lifetime.

Then, too, Americans should bear in mind the vast advantage the French actor has in having, what America does not yet possess, a *national public interest in the theater*. In fact, the theater is part of the life of the nation; it is considered a branch of public instruction, under the control of the national department of education; its leading representatives at Paris—the Opera, the Opera Comique, the Odeon, and the Comedie Française—receive a large annual support from government funds, just as, for instance, the agricultural schools do in America.

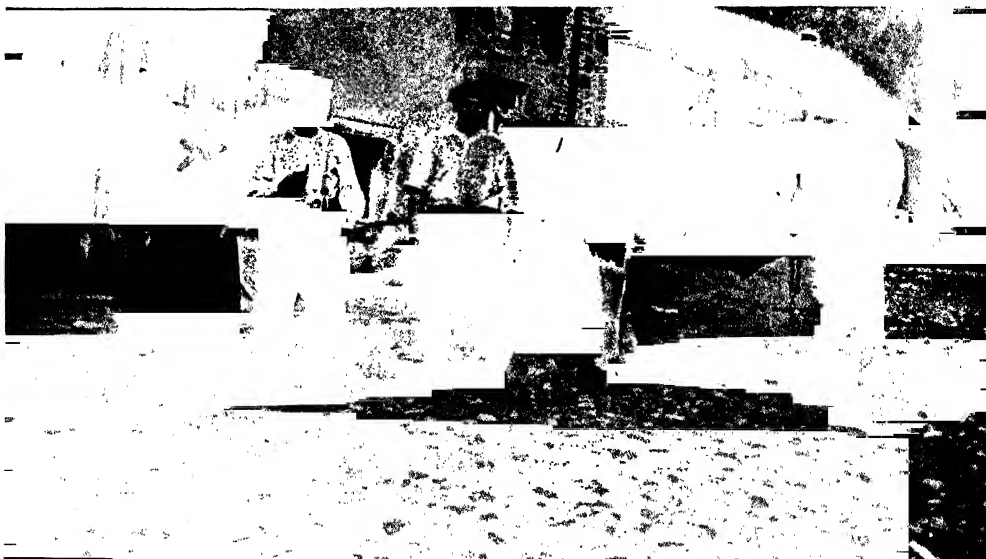
The result has been such world-famous dramatists as Molière, Racine, Corneille, Sardou, and Rostand; such masters of acting as Alexandre and Constant Coquelin, Antoine, Mounet-Sully, and Sarah Bernhardt.

Just as histrionic ability is native to the Frenchman, so one might also declare that the *scientific* attitude is characteristic of a great number of the French. The average native has enormous curiosity;



IN CASSOCK AND KHAKI: A FRENCH ABBOT AND AN AMERICAN LIEUTENANT IN A MONASTERY GARDEN

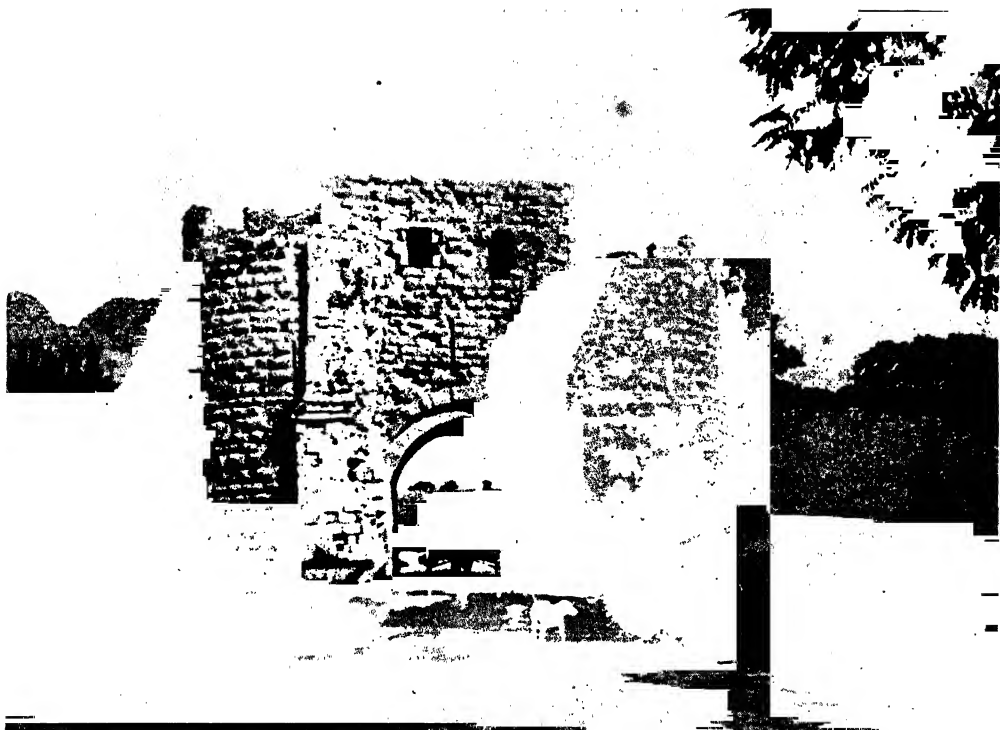
"Mainly Catholic in their traditions and sentiment, the common people still reverence the vast institution governed from Rome; but the educated classes, because of their belief in its opposition to certain democratic movements, have in recent years been rather alienated."



Photographs courtesy of W. L. J. al

A PEASANT HOME IN WESTERN FRANCE WHERE AMERICAN OFFICERS WERE RECENTLY BILLETED

The soldiers' hostess and host are to be seen at the left. Note the horse and the ox harnessed in tandem fashion. If this were in Austria or Hungary the woman would be the yoke-mate of the ox.



Photograph by H. C. Ellis.

THE TOWN GATE AT PROVINS

Note the sturdy strength of the French peasant woman trundling a heavily loaded wheelbarrow and the two men in the cart riding toward her. The quaint old town of Provins in the middle ages was a great industrial center, having a population of 80,000, of whom 60,000 were workmen. At the beginning of the world war it had scarcely 8,000 inhabitants.

he likes to be shown how; he admires accuracy; he worships reason. The result is that today this nation holds leadership in Europe in the sciences, especially the applied sciences.

The French peasant has been accused of lacking imagination; but the imagination of the French scientist leaps to meet the correct solution, while the German scientist plods toward it.

THE GIFT OF FRENCH SCIENCE TO MAN'S WELFARE

What marvelous skill has the Frenchman shown in the application of science to human diseases and deformities; what marvelous research has been his in bacteriology, neurology, and pathology; what patience, what accuracy, what insight, has he displayed in clinical observation and description!

To realize what French science has

done for man's welfare, one has simply to recall the names of Ampère, the investigator of electrical dynamics; Pasteur, the master of bacteriological research, conqueror of rabies, and founder of the famous institute that bears his name; Roux, discoverer of diphtheria serum; Chantemesse of anti-typhus serum fame; Yersin, discoverer of the bubonic plague bacillus and its curative serum; Claude Bernard, marvelous worker in vivisection; Berthelot, founder of thermo-chemistry, inventor of smokeless powder and aniline dyes; Pierre and Madame Curie, discoverers of polonium and radium; and Flammarion, master and interpreter of astronomy. The list has but begun; it might fill a score of pages.

But let us turn once more to the more strictly human side of French life. What shall one say, for instance, of what we Puritan descendants consider so vitally



Photograph by H. C. Ellis

A SCHOOL ON WHEELS IN FRANCE

The children's parents are members of a carnival company, traveling from town to town, much like our circuses. Because their fathers and mothers lead a nomadic existence is no reason why the education of the youngsters should be neglected, and this is how the problem is solved by the alert and resourceful French

nowhere may one find such honest gambling—if such a thing is possible—as in France.

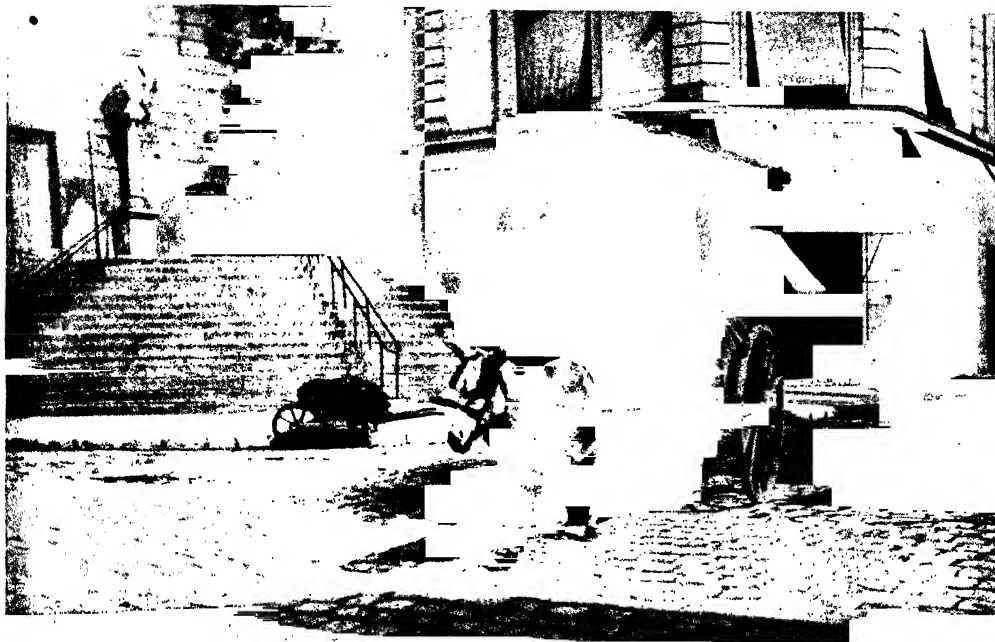
THE DUELLING CUSTOM

Still another derogatory remark and we shall pass to more pleasant phases of French life. To us duelling is utterly ridiculous; to the French it is a quick and unostentatious manner of settling personal difficulties.

There is a code of conduct for civilized men and, in the Frenchman's view, a man

should hold himself responsible for departing from it. Why carry such a matter, however, into the court? It is a private and personal affair. Why give it publicity in the newspapers and make lawyers rich and take the time of the judge and law courts?

A pistol shot or a slight thrust of the sword and the thing is settled, says your Frenchman. If the opponents are not killed they will both acknowledge that the code of conduct has been defended and vindicated; if one is killed the other



Photograph by H. C. Ellis

A BIT OF FUN OR A HUMANE PROVISION FOR THE COMFORT OF THIS PATIENT
LITTLE PLODDER?

The trousers are supposed to keep off the flies, but the clever mountebank knows that they also attract attention to his traveling Punch and Judy show

may be prosecuted for homicide, but if it was a fair duel is almost certain of acquittal.

Often indeed a French duel has resulted from what we Americans would consider very small breaches of politeness. But we must remember that politeness is one of the most marked national characteristics; the courtesy of the French, "punctilious," as some one has called it, is but another evidence of their love of form, system, established tradition. "The French put the same intentions into manners that all civilized people do into language, and have systematized them with the same care for correctness on the one hand and pliability on the other."

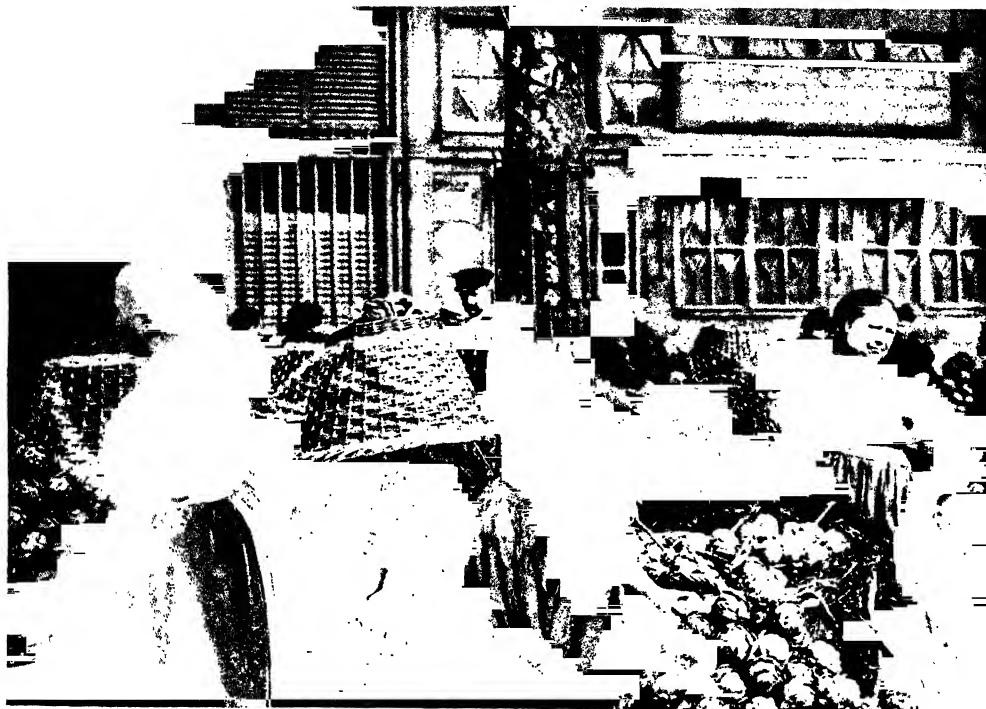
This observance of traditionally polite forms is often irritating to the hasty American. I remember that after I had waited in line an hour and a quarter in a Parisian railway station to reserve a seat

on a train I was dumbfounded to see two women clerks enter the office and hold up the entire business of the occasion to say good night and shake hands with every one behind the counter.

What is the use, says your average American, of this constant tipping of hats among the men, this constant shaking of hands when entering and leaving an office, this saying of farewell a dozen times before one goes? But the French know what they are about. Long centuries of such little courtesies have reduced the forms of politeness almost to a ritual, and every French boy, unlike every American boy, knows exactly what to say and how to act in every business or social situation.

THE FRENCH HOUSEWIFE WITHOUT AN
EQUAL IN ECONOMY

The French have long been a shrewd, calculating people who have watched closely every sou. They may seem ro-



Photograph by H. C. Ellis

THE ARTICHOKE SECTION IN CENTRAL MARKET, PARIS

The immense quantities of vegetables eaten by the French counteract in a measure the effect of some habits less healthful

mantic to foreigners; their passionate protestations of love may seem too frank to us of Puritan descent; but in not only financial affairs, but even their pleasures, they minutely calculate all items.

Probably there is not in the world the equal of the French housewife in economy and efficiency. Before the war wages were astonishingly low in France, and there must have been continual squeezing of each franc; but, thanks to the ability of the French wife, who could tell from outside evidence that there was unusual stinting in the average home?

To see a French woman bargain at the market is to learn much in economics, mathematics—and oratory. She simply refuses to pay the first price quoted; her genius for “getting what you can” is admirable.

The Frenchman is not so careful and is too liable to be drawn to the café for a consoling drink or the seductive game of piquet; but the hand that holds the

purse-string is the hand that rules the world—and the French wife holds it tightly. Her faith in small savings rescued France after the war of 1870, when vast hoarded wealth was willingly brought forth to pay the enormous national debt, and the same faith made it possible for France to preserve herself and the world during the world war.

FRENCH PARENTAL REVERENCE EQUALED IN CHINA ONLY

With such women, is it any marvel that the French home is so admirably united? The family is the primal social fact in France, and the parents are “the fundamental fact without which the organism (the family) could never have come into being.” Hence there is a reverence for parents equaled probably only by the ancestral worship of China. Indeed, it is very doubtful whether the love between husband and wife equals that existing between parent and child.



NOT ALL THE GOOD FRENCH COOKS ARE EMPLOYED IN THE PARIS RESTAURANTS
 "Probably there is not in all the world the equal of the French housewife in economy and efficiency"

There is constant consultation with parents and relatives by sons and daughters of advanced years—a form of consultation scarcely ever heard of in an American family.

If a Frenchman of thirty or thirty-five proposes changing his profession, he may consult not only his father and his mother, but the entire family group; the proposed marriage of a daughter or a son is often an occasion for a council of the entire clan, including distant relatives that in America would hardly be included in our family tree.

The world has been fond of pointing out that the French language has no word for "home." It has a word possibly even more tender. What a meaning is in the sound of "foyer"! It includes the concept of hearthstone and much more. It brings to the French mind and heart all the ideals, activities, and dreams of a close, inner circle where obedience is a

joy, respect a willing observance, and love an ever-present radiance.

The foyer is not for the outside world; only behind locked doors does it really live and flourish. The father may deal with the outside world of business, but here in the foyer the mother generally rules supreme, and her influence is everywhere seen in it.

Is it any wonder that when one parent dies the other is immediately taken into the home of the married son or daughter, there to rule as a sort of benevolent, enlightened despot?

COURTSHIP AMONG THE FRENCH

Perhaps some youthful American reader of these pages has already asked, How can there be any courtship in so private a home, where everybody within the charmed circle is consulted about all the affairs connected with that circle?

As a preparatory step toward such a



PARIS: PERSPECTIVE OF SEVEN BRIDGES—VIEW TAKEN FROM ST. GERVAISE

Photograph from G. Fattorusso

The winding course of the Seine through the city, measuring seven miles, is crossed by 31 bridges. Rising from the river are two islands of considerable size: the Île St. Louis and the Île de la Cité. Thus the capital is divided into three parts—the quarters on the right bank, the Cité with the island of St. Louis, and the quarters on the left bank. In the distant background of this picture the Eiffel Tower looms to the left and the Arch of Triumph to the right.



Photograph by H. C. Ellis

A WOMAN'S WORK AT THE CENTRAL MARKET IN PARIS

Like London's Covent Garden flower market and the fish market of Venice, the Central Market of Paris is one of the sights of the city. Much of the heavy labor in this market fell to the lot of women even before the war so sorely depleted the man-power of France.

beautiful home life one would think that there should first be a most romantic love affair, with moonlight walks and whispered words of adoration and all the other pretty things found in the sentimental novel.

Unfortunately or fortunately—as you may view it—these accompaniments of American match-making are frequently totally absent from French courtship. Indeed, in the middle and higher classes of French society there is often very little possibility of love-making before marriage.

Owing to the family regulations and the fact that there are few coeducational schools in the country, the French girl seldom makes with boys those confident, personal friendships so common in America.

In the main the French mother prefers not to trust her daughter alone with a

man; if they are to do any loving, it is better that they do it where she can keep an observant eye on them. In spite of such manifest difficulties in the preliminaries, the French girl probably desires marriage more ardently than the American girl confessedly desires it. There is so much supervision of the French lass in her home that her only release seems to lie in marriage.

Hence a remarkable docility in the matter of the choice of a husband. Some one has said that the French woman marries, not because of love, but with the hope of love afterwards.

With the letters of her sweetheart too often the property of the entire household, with too little opportunity really to "size up" the future husband, and with the necessity oftentimes of obtaining the consent of practically the entire family group, she cannot rely altogether on the



Photograph by H. C. Ellis

TRUFFLES, USED FOR FLAVORING FRENCH DISHES: THIS HANDFUL IS WORTH ALMOST 500 FRANCS

Pigs and dogs are trained to hunt truffles. Some varieties, however, exhale so powerful an odor that their places of growth beneath the surface can readily be detected by the gatherers of the precious fungi.

dictates of the heart, but may accept the husband in a manner that would seem curiously business-like and matter-of-fact to the American girl.

THE DOWRY A TRUST FUND FOR CHILDREN

I have said that the consent of the family group is generally requested. To the French a marriage means readjustment of the entire family group, and obviously, according to French reasoning, all members of the family must be consulted.

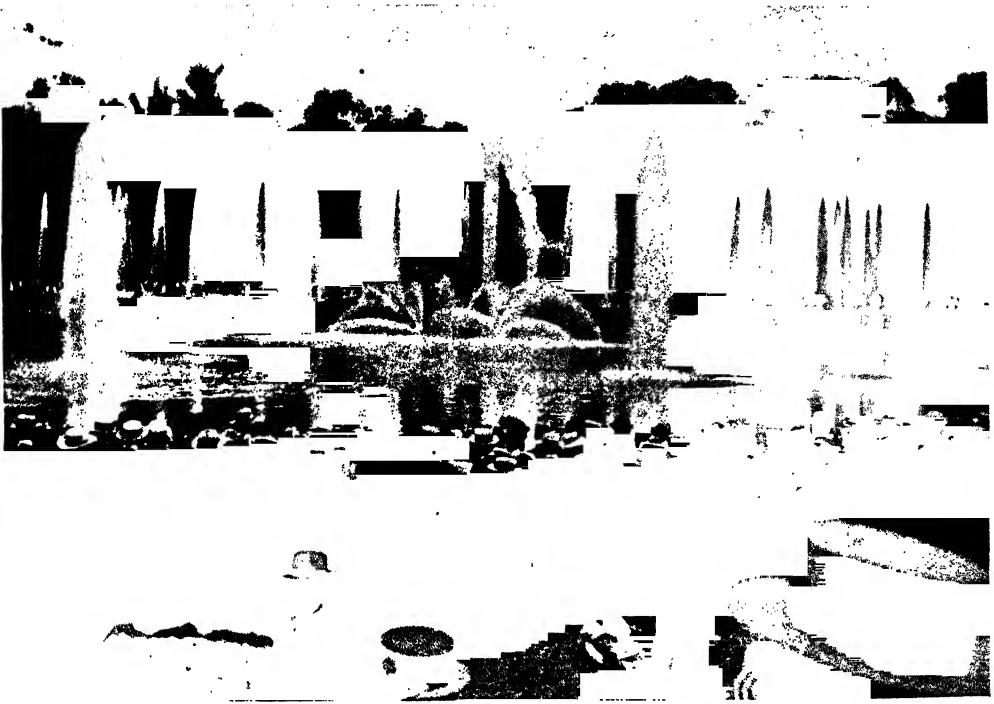
And this "round-table" discussion deals often with matters so extremely material that under similar circumstances the American girl would feel shocked if not positively insulted; for extreme financial prudence enters into the conference.

In the better-class families a dowry accompanying the wife will practically be demanded. What does she bring with her? is the not uncommon question of the young man's parents.

Extremely prudent it all may seem; but one should remember that this dowry is not to be used by the husband for his personal use, but as a trust fund for the maintenance of the expected children. If the wife dies childless the dowry will, in all probability, revert to her family; the theory of the affair is that such property belongs not to the individual—either husband or wife—but to the family as an institution.

In some ways such foresight is good, for

it prevents hasty and poverty-ridden marriage; in other ways it is bad, for it deters marriage in a land where children are sorely needed and causes the French family to be small, so that the one or two children, when grown, may possess the proper financial attractions for marriage. Hence, too, the unusual importance attached to the child in the French home. He or she is a somewhat expensive luxury; his or her intelligence may be unduly forced; he or she may become almost unpleasantly precocious; he



Photograph by H. C. Ellis

THE FOUNTAIN OF NEPTUNE, AT VERSAILLES

The leveling of the ground for the gardens and park of the palace at Versailles, the making of a road to Paris (11 miles distant), and the erection of the Aqueduc de Maintenon to bring water for the fountains from the River Eure are said to have occupied 36,000 men and 6,000 horses for years, while the palace itself cost in the neighborhood of \$100,000,000, in addition to the forced labor exacted under the old feudal system. The fountains at Versailles only play on the first Sunday of each month from May to October and on special fête days.

or she must be given a bountiful start in life.

What is the effect of this attitude toward the child? To an American it makes the higher class French girl an adorably innocent and totally feminine woman—the number of international marriages during and after this war will prove the statement—while to that same American it makes the young Frenchman starting on a commercial or professional career seem rather lacking in that aggressiveness and daring so much admired in American business circles.

Again, for the sake of the child, the family and the foyer, the French wife is more likely to forgive transgressions of matrimonial rectitude than would the American wife. A father's neglect of his family is, in the French woman's eyes, far more criminal than the temporary

straying of the husband into doubtful relations with another woman.

With us conjugal rectitude is of primary importance; with the French that rectitude which sees that the home remains intact and comfortable is more important. In other words, your French wife is likely to consider *domestic* faithfulness more essential, more to be demanded, than *conjugal* faithfulness.

NO MILITANT SUFFRAGE SPIRIT IN FRANCE

Such a home, such a privacy of domestic life, does not encourage the French woman to take a large part in the public life of her nation. For instance, there seems to be an astonishingly small interest among the average French women as to whether they shall ever be allowed to vote. They seem very willing, in their



Photograph by L. C. Ellis

CHATEAU PIERREFONDS: NORTHERN FRANCE

Situated midway between Compiègne and Villers-Cotterets, this imposing feudal castle was one of the most cherished relics of medieval times. It stood on a rocky height overlooking the village of Pierrefonds and was built by Louis of Orleans, brother of Charles VI, in 1390. Its walls are from 16 to 20 feet thick and its eight massive loop-holed towers rise to a height of 115 feet. It has suffered much during the war from aerial bombardment by the Huns.

extreme femininity, to leave the matter entirely to the men.

And what a wonderful government these Frenchmen have made through their vote! Democracy is indeed the test of all national activities. The French government shows genuine respect for the *average* citizen; indeed, every Frenchman seems proud that he is simply an average citizen. Hence the whole tendency of the government is to work consciously against legalization of social inequalities.

Any man with ability and ambition can rise to any position. The bourgeoisie or middle class—that is, the traders, professional men, military officers, peasant-proprietors, etc.—is so large that all other classes are negligible, and necessarily there is extremely wide social equality.

Again, French democracy, since it is popular, is admirably authoritative. The people show a surprising submission to a large amount of state administration. It is not the supine submission found in Germany or the uninquiring attitude found in a large portion of England's lowest classes; it is willing, intelligent

obedience to administrative machinery created by the people themselves.

Perhaps, as stated before, there is too much machinery; perhaps there is too much centralization of national activities under government control in one spot (Paris); but, after all, the widespread interest in active self-government, the healthful, vigorous, often passionate, public discussion, the political alertness of the people as a whole, means safety for France.

There may be too much centralization in Paris; but every Frenchman, whether he lives in a Normandy village or in the mountains that look toward Switzerland, is proud of this city that has long been the light of the world.

"The light of the world!" May not the words be applied justly to all France? What would Europe be without her? One can conceive of a Europe existing without Germany or Russia, but the glory of the continent would be extinguished if France should die. It is for her and what she has long represented in liberty that the world battled yesterday. That nation which seeks to destroy France is foredoomed to destruction.

THE PRICE OF LIBERTY, EQUALITY; FRATERNITY

THE price in stalwart young manhood which the French nation has paid during the world war to preserve human liberties has exceeded by appalling numbers the toll exacted of her associate Allies.

While France has not yet made an official announcement as to her losses, it is estimated that one million eight hundred thousand French patriots have laid down their lives on the altar of their country's freedom; one million gave limb, sight, or health, and were thus rendered permanently incapacitated for their accustomed pursuits of peace; one million two hundred thousand others sustained injuries which have retarded their activities.

Thus, four million men is the tribute that war has exacted of what Mr. Holliday rightly characterizes as the most civilized country on the globe for the salvation of her own people and the safeguarding of her democratic institutions.

What if America had suffered such losses in proportion to her population? Every man between the ages of 21 and 30 who registered for military service in the United States on June 5, 1917—more than nine and a half million in number—would be a casualty today, and there would still be a million and a half men to be added from the registration lists of September 12, 1918. Mothers, fathers, wives, brothers, sisters, and sweethearts would be mourning for five million American dead.

For every ten men, women, and children in France at the outbreak of the war one able-bodied citizen in the prime of manhood has either laid down his life or suffered bodily injury. The casualties in no other army save the Serbian even approached such sweeping percentages.

Truly, the sons of France gave themselves without stint for the cause of world democracy.



VIEW OF THE HOLY OF HOLIES OF RUSSIA, SHOWING THE HIGH WALL AND LOFTY WATCH-TOWERS WHICH INCLOSE IT

Originally a fort, the Kremlin is now museum, mausoleum, and treasure-house of things precious in Russian life and Russian religion. In no other equal area in the world is there crowded such an array of historic cathedrals and monasteries, sacred relics, trophies of war, sacerdotal robes, gold and silver vessels, precious stones, pearls, and jewels to the value of millions of dollars, etc. The principal buildings, reading from the left, are: (1) Treasury and Museum; (2) Grand Palace; (3) Cathedral of Annunciation, where the Tsars were baptized and married; (4) Cathedral of Archangels, where all the Tsars were buried until Peter the Great; (5) Cathedral of Our Saviour behind the Golden Gate; (6) Cathedral of Assumption, where the Tsars were crowned (see pages 381 and 382); (7) The Bell Tower; (8) Monastery of Miracles (see page 384).

THE REBIRTH OF RELIGION IN RUSSIA

The Church Reorganized While Bolshevik Cannon Spread Destruction in the Nation's Holy of Holies

BY THOMAS WHITEMORE

THE Holy Kremlin of Moscow has become a Bolshevik fortress. From the 9th to the 16th of November, 1917, for more than seven days under a hurricane of fire, the city was stormed and finally carried by the Bolsheviks in terrible fratricidal war. Since then the sacred citadel has been playing a new and ignominious rôle in the history of Russia.

From the time of the building of the Church of the Beheading of St. John Baptist and of the little Church of our Saviour in the Forest, bespeaking the days when the acropolis was still a wooded hill, a multitude of churches and palaces, witnesses of Russia's glory, have written here a national document in stone. The history of Russia is the history of the monuments of the Kremlin.

During the bombardment a Chinese workman, looking on, was heard to say, "The Russian is not good; bad man; he shoots on his God."

Outraged and despoiled, the Kremlin is in bonds today, guarded by foreign mercenaries. The forty times forty churches of the white stone city seem to draw a little closer in answer to the trumpet calls of the Kremlin domes. The battered towers and shredded gates, from which red flags are defiantly flung in the face of Russia, still stand bravely to protect the sacred site.

Deputations from the Sobor, or Russian Council, now sitting in Moscow, have abjectly to ask the Bolshevik committees' permission to hold services in the churches of the Kremlin. If the Bolsheviks dared, they would long since have declared the churches of the Kremlin to be museums, and so extinguished their light of faith.

The representatives of the Church have

acted in fearless determination that the churches should continue to function, and have continued their sessions amid the violence and destruction raging on all sides of them (see also pages 392 and 393).

Entrance to the once always open Kremlin is now only by permit, through the Troitsa gate. All day long a moving line of people on various missions, showing their passports at the window of a little wooden kiosk, beg to be allowed to enter.

A SCENE OF SACRILEGE WITHIN THE KREMLIN

Once within the walls of the Kremlin, one faces piles of ammunition, barbed wire, and ugly miscellaneous heaps of rubbish. Austrian, German, and Lettish soldiers, some frankly in their enemy uniforms, are lounging about or standing guard. Army motor-lorries and cars carrying dark, sallow, un-Russian-faced government officials tear up through the gates, shrieking a curse, so it seems, as they enter upon all-hated Christian Russia.

The farther one walks about and sees the outraged fabric on all sides, the stronger becomes the feeling of grief. With indescribable emotion, one enters the resounding stone inclosure near the Cathedral of the Falling Asleep of the Mother of God. Here are still to be traced the stains of enormous pools of blood in which floated human fragments, tracked about by daring feet.*

* Many notes of personal experience and all the photographs of the Kremlin which illustrate this article were graciously given me in Moscow by my friend, Bishop Nestor, the distinguished missionary bishop of Kamchatka, who took them himself in the Kremlin by permission of the Bolshevik government.



PROCESSION OF THE FAITHFUL IN MOSCOW IN THE RED SQUARE, SHOWING THE WALLS OF THE KREMLIN AND THE CHURCH OF THE
BLESSED BASIL IN THE DISTANCE

The revolution has brought intellectual Russians a long way from the cold indifference, the empty churches, and the forgotten traditions of
their faith



EXTERIOR OF THE USPENSKI CATHEDRAL (SEE PAGES 379, 390, AND 393)

Showing the shell hole in the central dome. In this church the Tsars were crowned.

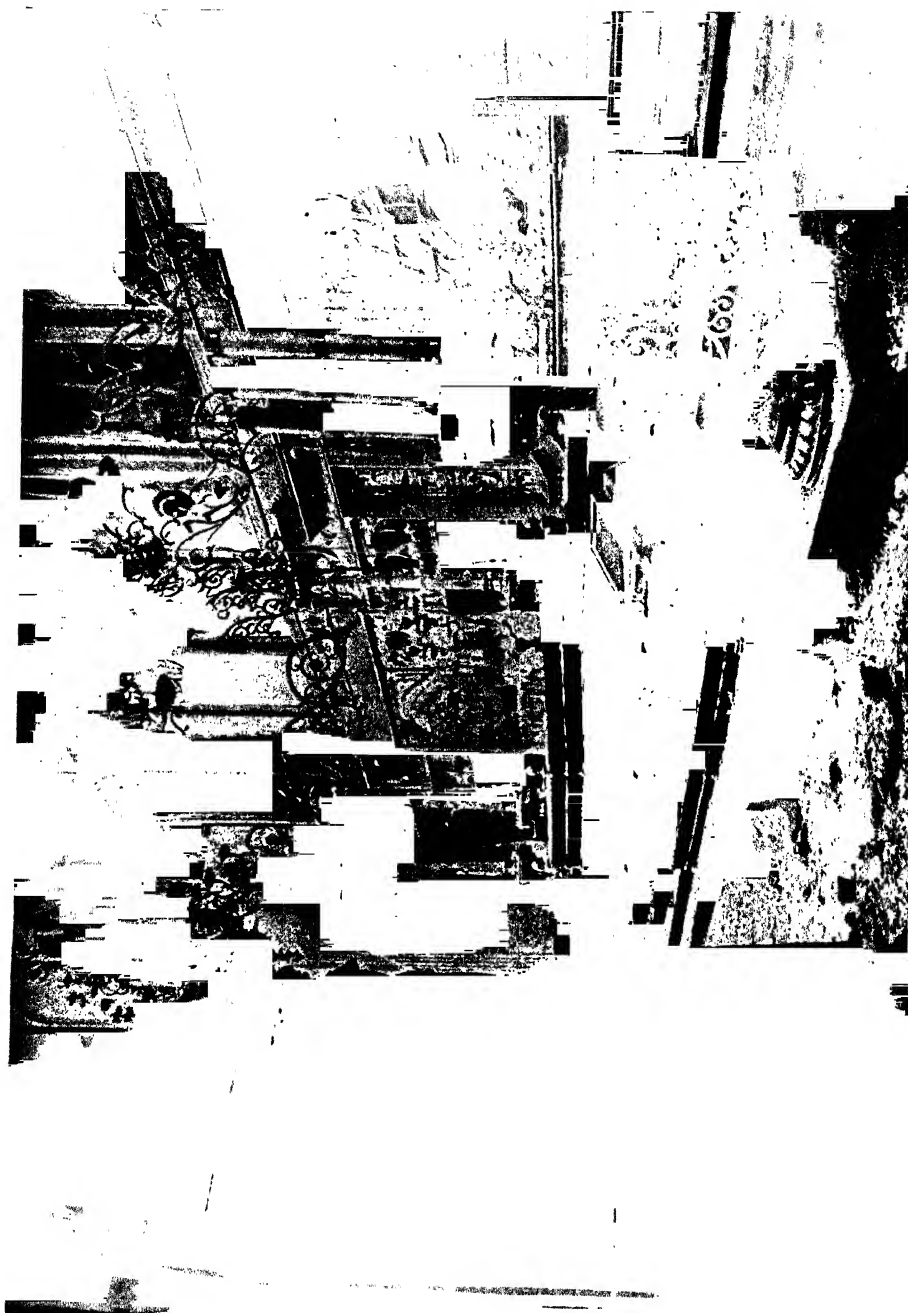
The Cathedral itself has been badly treated. A shell struck its central dome and, bursting among the five domes of smouldering gold, viciously smote a second. The hole in the chief dome between the ghostly frescoes of the saints measures 7 feet in length and nearly 6 feet in width. In the drum of the dome is an ominous crack.

DEVASTATION INSIDE THE CATHEDRAL

The damage has not even yet been examined in detail by architects, and it is

not known, therefore, whether such wanton devastation can be repaired.

The window glass is everywhere smashed or shot through. Within the Cathedral there are strewn about splinters of a 6-inch shell, which exploded there, and fragments of white stone, brick, and rubble. The gold and silver candelabra, those constellations among which all within the church seems to float through space, are bent as by storm; the Altar and the Sanctuary are strewn with broken glass, brick, and dirt; the Shrine of the



INTERIOR OF THE USPENSKI SOBOR, OR THE CATHEDRAL OF THE FALLING ASLEEP OF THE MOTHER OF GOD

Showing on the pavement the shattered fragment of the shell-struck dome. This great edifice, formerly the burial place of the Patriarchs, was built by Fioraventi, of Bologna, in 1475-79. Though repeatedly devastated by plunderers or fire, it has always been restored in its original form. Among its many relics were "the shroud of Christ, the robe of the Virgin, and a nail of the true cross" (see pages 379, 381, and 393).

Holy Martyr, Patriarch Hermogen, is covered with fragments of stone and rubbish.

This is the church built by Fioraventi of Bologna, in which the Tsars were crowned and in which the earlier Patriarchs were laid to rest. It is the precious reliquary of Russia's rich inheritance of the treasure of the ancient Eastern Church.

THE MARVELOUS EASTER SERVICE

In the days before the suppression of the Patriarchate by Peter the Great (see page 390), on Good Friday—or, as the Russians say, Great Friday—the Patriarch, in humble imitation of our Lord's entry into Jerusalem, rode on an ass from the Church of Blessed Basil, across the mosaic of fluttering doves, through the Gate of the Saviour, up to the Kremlin, but this year the new Patriarch, Tikhon, was forbidden entrance in the ancient way. Indeed, it was late on Easter Eve before His Holiness knew with certainty that he should be allowed to celebrate in his own Cathedral on the morrow.

In spite of the desecration, amid the ikon-clouds of steadfast witnesses to the faith, the Patriarch officiated at Easter.

There, on Easter Eve, for two hours before midnight, one hears the Acts of the Holy Apostles read. Meanwhile the lamps and candles, lighted one by one, swim like planets into our ken. The church swings in the shadows like a huge censer.

Then the gates of the sanctuary open and, in the vestments of royal purple, Patriarch, bishops, and priests, with silver and crystal crosses, like a torrent, flood the church with song: "Christ is risen!" they exclaim. "He is risen, indeed!" the people make answer.

The jeweled Gospels are thundered in different languages from the four corners of the church to all the earth. In the orchestra of voices the festival bell of the tower of John the Great companions the mighty voice of the archdeacon, Rosov, the Chaliapine of the Russian Church.

A HOLY MONASTERY OUTRAGED

It is all a vision of the forms and color of the Imperial Byzantine Court, in which

the Church on earth pays her most splendid homage to Heaven.

A dreadful impression is produced by the present appearance of the Chudov Monastery, the "Wonder-working Monastery." The façade of the south side has been pierced by six heavy shells. In the rose-red walls are deep breaks and cracks and holes from 5 to 7 feet in diameter (see page 384).

Two shells broke through the wall of the Metropolitan's apartments, in which a member of the Council, Benjamin, Metropolitan of Petrograd, was staying. Inside the rooms there is complete destruction. Fragments of furniture are mingled with heaps of stone and rubbish.

In one room a shell pierced the immense, thick wall near a window and destroyed it as far as an ikon of the Mother of God which stood near, but the ikon and the glass over it and the lamp hanging before it were uninjured. The church in the monastery, where the relics of St. Alexis rest, did not suffer; only the windows were broken. The relics of St. Alexis had been carried to the catacombs church at the beginning of the firing.

There, beneath the low vaults, the Metropolitan, Benjamin; Archbishop Michael, of Grodno; the Prior, of the Chudov Monastery; Bishop Arsenius, the Elder Alexis, of the Zosimov Hermitage, and all the brethren offered their prayers day and night, under the unceasing rattle of the guns which shook the walls of the church.

GERMAN INVECTIVES MAR CHURCH WALLS

In the Church of St. Nicholas, in the belfry of the tower of Ivan the Great, a shell crashed through a window and destroyed the east wall of the interior of the Sanctuary. The large, magnificent old Book of the Gospels, which was placed against the ruined wall, was thrown to the floor near the Altar. The front cover was torn off, and the precious ikons of the Resurrection of Christ and of the Evangelists adorning the book were broken and thrown about; many leaves were torn and crushed.

The Altar of Oblation was broken and the service books torn. All over the Sanctuary bricks were scattered about, with splinters of shells and various eccle-



SHATTERED EXTERIOR OF THE CHUDOV MONASTERY, COMMEMORATING A MIRACLE OF THE ARCHANGEL MICHAEL (SEE PAGE 383)
 This is one of the most celebrated monasteries in all Russia. It occupies the land which was given to the Metropolitan Alexis in 1358 by a grateful Tatar Khan. Inside there is complete destruction. Fragments of furniture are mingled everywhere with heaps of stone and rubbish.

siastical objects, heaped up between the Altar and the Royal Gates, but the Altar itself, in spite of its nearness to the ruin, was uninjured.

In the Church of St. Nicholas lies a part of the holy relics of the Prelate Nicholas, a saint honored by all Christians and even by the heathen. The walls of the entrance to this church are written over with the most filthy and sacrilegious inscriptions and invectives, not only in Russian, but (more significant of the leadership in all this despoliation) in German. The entrance of the church where the relics lie was used as an outhouse.

MADMEN DIRECT A RAIN OF DESTRUCTIVE SHELLS

When raining destructive shells on the Kremlin, the madmen evidently decided beforehand not to spare one of the churches; and, in fact, traces of the crime are left on all.

The famous porch of Lodgetti, of the Church of the Annunciation, from which Ivan the Terrible admired the comet, is destroyed by shot and shell. Miraculously, the age-dimmed interior of this remarkable little church is unharmed. The jasper floor which the Shah of Persia gave to the Tsar Alexis, the floor of many-colored jasper, like an Apocalyptic sea, binding the door-posts and lintels, set with precious stones, remains like a ponderous Byzantine cope-clasp.

The Church of the Archangel is scarred with the marks of shells. The Churches of the Resurrection and of the Deposition of the Robe, the oratories of the ikon of the Mother of God of Pechersk, and the Church of the Forerunner, in the Borovitsk Tower, domes like a garden of Hafiz, or Omar Khayyam, all fell beneath sacrilegious fury. The last-named church came in for severe usage, and some shots struck the ikons of the sainted Prelates of Moscow and of the Mother of God of Kazan.

DIAMONDS AND PEARLS IN RUBBISH HEAP

The Patriarchal Sacristy, containing treasures of incalculable value, has been turned into a heap of rubbish, where, among sand, rubble, fragments of the walls, and broken glass, the unholy hand digs for diamonds and pearls (see p. 387).

The worst devastation has occurred in Room No. 4, which was pierced by a bursting shell. Here several glass cases and cupboards with precious ancient covers, or palls, ornamented with gold and precious stones, were torn to shreds. Some memorial palls were pierced and completely ruined.

A book of the Holy Gospels of the twelfth century (1115), of the Grand Duke Mstislav, of Novgorod, was injured by a splinter. Various precious objects and ornaments of the Patriarchs, such as mitres, gauntlets, church utensils, vessels, and crosses, are all thrown out of the cases onto the floor and broken to pieces.

Another shell, in Room No. 6, destroyed a case containing Patriarchal vestments. The historical Russian ecclesiastical treasury, the noble monument of the past Patriarchal life of a great nation, is shattered.

Subsequently, after the Bolsheviks had assumed protection of the treasury and locked themselves into the Kremlin, these rooms were broken open and ruthlessly looted by some of their own company.

GEMS GOUGED FROM ORNAMENTS

In their haste to rifle the cases and in their indifference to the national significance of the treasury, these robbers wantonly ruined ecclesiastical ornaments by brutally gouging out the gems or ripping off their golden mountings, and by cutting out the jewel-studded medallions from the vestments made of ancient stuffs, in which weaver and goldsmith wrought with a mutual hand. Some of the treasure has been recovered, but most of it is either destroyed or irrevocably lost.

What hope is there for the safety of the Hermitage treasure brought from Petrograd in wooden boxes now lying in the Kremlin?

The Church of the Twelve Apostles is riddled with shot. Furrowed by shells and broken, its east end lighted by holes and cracks, it gives the impression of being held together by some miracle.

One shell pierced the wall from the south side, below the window, and burst in the church, causing much destruction; the standard candle-holders were broken and many ikons on the walls injured by splinters.



OUTRAGED AND DESPOILED

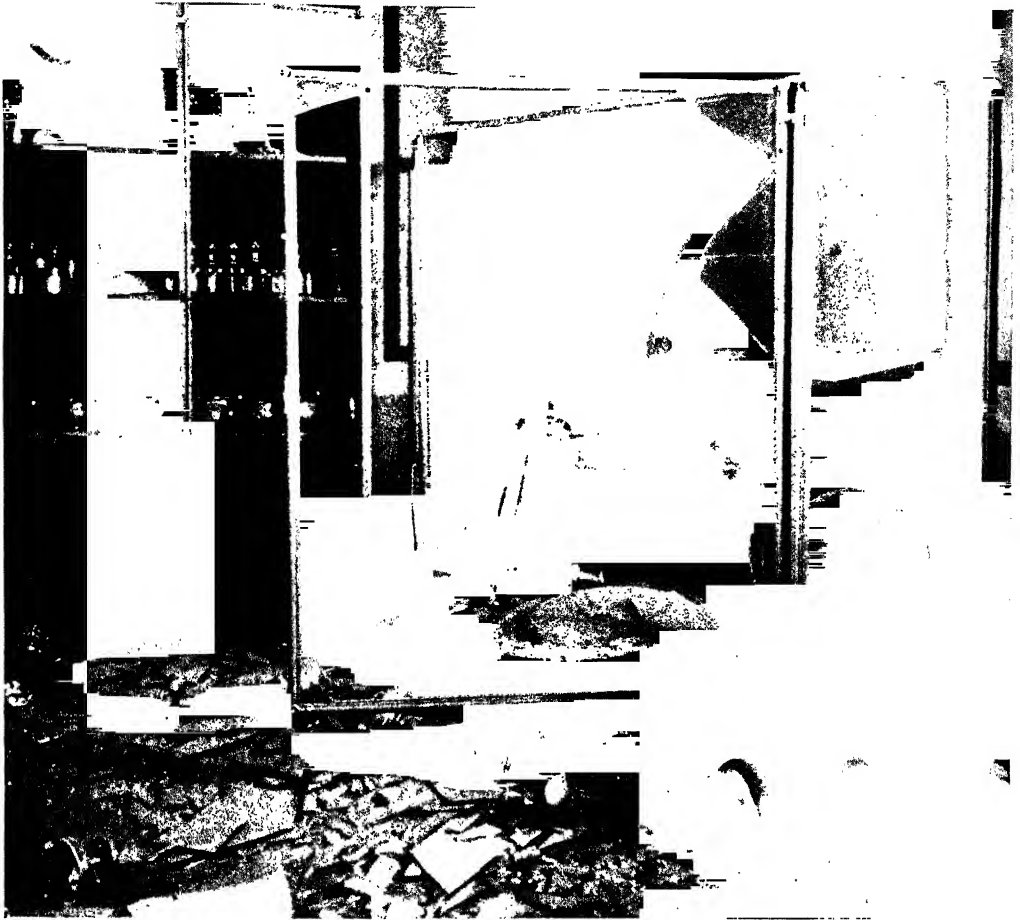
Broken and twisted candelabra, shattered windows, battered ikons, crushed and trampled-upon sacred vessels—such are the scenes which greet the eye of the worshiper in many of the "forty times forty churches" of Moscow today.

On a large crucifix, standing by the north wall, the outstretched hands of our Saviour were broken off. The figure was gashed with sharp bits of brick, and oil from the hanging lamps had poured over the whole. Red spots made a startling likeness of a living body covered with blood.

Some pilgrims who had succeeded in getting into the Kremlin, on approaching this sacred object, were unable to look at it and gave way to their grief, passionately embracing the feet of Christ crucified afresh (see page 388).

The little Nicholas Palace, which formerly belonged to the Chudov Monastery, suffered severely from the attack. From the outside, one peers into great holes in the walls. Inside all is complete devastation. The great mirrors and other furnishings of the palace have been barbarously demolished, cupboards broken into, and their books, deeds, and papers scattered through all the rooms.

The Church of Saint Peter and Saint Paul in the palace was pierced by shell and laid waste. The ikonostasis was broken, the Royal Gates forced open by



DESPOLIATION OF THE PATRIARCHAL TREASURY, SHOWING THE GOLD AND SILVER CHALICES (SEE PAGE 385)

Among the sand, rubble, shattered walls and fragments of glass, unholy hands rummaged for jewels which were knocked from their settings in sacred vessels

the shock of the explosion, and the curtain rent in twain. Many valuable ikons were stolen.

The Law Courts are knocked about, and the cupola of the famous Catherine Hall is pierced by shell. In the rooms of the experts or detectives, the fools of revolutionaries, coming upon the poisoned organs, abortions, etc., had devoured them because they were preserved in spirits!

The Nicholas Tower and Gate, where Napoleon, in 1812, broke the ikon of the sainted Prelate Nicholas, but which has remained uninjured since that time, has now been subjected to heavy fire and

riddled with shot and shell (see page 391).

The case covering the ikon of St. Nicholas is ruined; the canopy above the ikon is broken and hangs by a nail. On one side the image of the angel is broken and that on the other side of the image is pierced.

The representation of St. Nicholas between has been preserved, but around the head and shoulders there is one continuous pattern of shot holes. At the first glance it seems that there is no ikon, but, on looking more carefully through the dust and rubble, there appears first the stern face of the saint, with a wound on



A GRIM MONUMENT TO REVOLUTIONARY SACRILEGE

Furrowed by shells and riddled with shot, this noble edifice, the Church of the Twelve Apostles, presents an even sorrier spectacle within (see page 385)

the right temple, and then the whole figure, considered always as the defense of the Holy Kremlin.

THE GREATNESS AND THE GLORY OF THE KREMLIN

The Gate of the Saviour was till now honored by traditional custom, where every one who went through, even the foreigner and the pagan, bared his head as a mark of reverence. Now no one enters here and armed guards stand

smoking cigarettes, scolding the passers-by, and quarreling among themselves.

The famous clock with the musical chimes is shattered. The hands stopped at the moment when a heavy shell broke into the Kremlin wall and left its indelible trail of blood and shame on this hallowed heart of Moscow.

One would like, as so many have said, to open the Kremlin gates that all people, not only of Moscow, but of all Russia, might see the ruin of their sacred places.

What will wash away all the uncleanness, Russians ask, by which the Russian barbarism directed by the enemy has defiled the Kremlin?

It is impossible not to recognize that in the Kremlin are found the history of the art, moral strength, might, greatness, and glory of the Russian land. If ancient Moscow is the heart of all Russia, then the altar of this heart is the Kremlin.

A sacrilegious attack upon it could be made only by madmen or by men to whom nothing is holy and who are incapable of understanding (whatever Russia's future is to be) the significance and importance of this monument of Russian history. It cannot be considered a sufficient reason that the artillery fire directed against the Kremlin had for its object to crush the handful of officers and cadets who were within.

Not daring to approach, Bolsheviks searched for them with shell, injuring now the dome of the Cathedral of the Repose, now the Church of the Twelve Apostles, now the Tower of Ivan the Great, now the Chudov Monastery, and so on, in turn, almost to the last church.

Alas! This crazy fallacy is characteristic of the self-imposed government. What they did in the Kremlin they are doing today throughout Russia. One would like to believe that, if these men were once Russians, all consciousness of love for their country had been drained out of their hearts before their subservience to the enemies of all that is to a true Russian dear and holy!

Now these wounds have been bound up, as far as is possible, by merciful hands, as if bandaged, propped up by splints, and covered with sheets of iron, so that the winter shall not do still greater damage.

THE ORTHODOX CHURCH RISES FROM THE RUINS

A seventeenth century tale begins: "What man ever divined that Moscow would become a kingdom?" The twentieth century historian may wonder how the Kremlin could have been the target of such violence.

What further struggle and suffering await the Kremlin no one knows. No foreign eyes friendly to Russia remain in Moscow now to see.

The violent commotion which is shaking the life of Russia, typified physically by the wrecking of the Kremlin, is finding its first visible reaction in the reorganization of the Russian Church.

In the cities, where life courses more rapidly than in the country, the people, or a great part of them, are perceptibly returning to the Church, but in the villages a mental bias, which originated in the cities, amounting to an absolute denial of the Church's moral and religious teachings, is apparently prevailing. The peasant's faith is shaken, but the Intelligencia are again kissing the Cross.

The manner in which the revolution is affecting the Church, and its consequences with regard to external organization is already sufficiently clear.

From the middle of the seventeenth century two opposite paths opened before Russia: the path blazed by St. Serge and the path of Peter the Great. St. Serge's path led up to statehood in the moral consciousness of Russia. Peter the Great drove Russia into the establishment of an enforced empire held together by autocracy.

Peter, in his determination to centralize autocracy in Russia, placed at the head of the Church administration a *collegium*, to which was given the name of the Holy Governing Synod. This consisted of ecclesiastics of different grades, over whom, by Peter's decree, the reigning Emperor was instituted supreme civil judge. The Holy Synod was assisted by the presence of a High Procurator appointed by the Emperor, an official whose duty it was to see that the Synod's dispositions should conform to the laws of the State and to its interests.

The Russian Church has not since that day drawn a free breath. No ordinance of the Synod could be promulgated, unless confirmed by the secular authority. The ecclesiastical members of the Synod were appointed and summoned to take part in its labors by the Emperor alone.

When, in 1917, the imperial power was abolished, the Russian Church faced the question of organizing her administration afresh.

Under the past imperial régime, the secular element, in the person of the Em-

peror and of his representative, the High Procurator, assumed a predominance incompatible with the spirit of the canons of the Orthodox Church. There was danger that, as a consequence of the recent revolution, the head of the democracy might assume a like predominance. The only way out of this menacing situation was to convoke a council, which is the supreme normal organ of Church legislation, administration, and justice.

The Council assembled in Moscow on the 15th day of August, 1917. It was opened in the Church of the Falling Asleep (*Uspenski Sobor*), within the hallowed precincts of the Kremlin. The Metropolitan of Moscow, Tikhon, was elected President; the Vice-Presidents were the two Archbishops—Arsenius, of Novgorod, and Antonius, of Kharkov—and two presbyters, one of whom was Father Nicholas Lubeimov, chief priest of the army and navy, and two laymen—Professor Prince Eugene Troubestskoi and the President of the Duma, M. V. Rodzyanko; later Mr. Alexander Samarin was elected a Vice-President (see pages 379-382).

"WE WISH TO HAVE A FATHER"

The first question to be settled was this: should the Patriarchate be restored? Some of the peasant members spoke energetically to this end, declaring that such were the instructions from their constituents. One of them said, "We wish to have a father."

In Russia's present condition a declaration from the most numerous class of the Russian people possesses a peculiar weight; but the idea of the restoration was vigorously opposed by a group headed by the liberal professors and by several priests. When, however, a considerable majority declared in favor of the Patriarchate, the opponents received the decision calmly, and most of them set to work heartily to assist in its realization.

So the Patriarchate was restored. But it was not restored in the form it had in Russia in the sixteenth and seventeenth centuries. In those days the Patriarch was invested with excessive personal power, which did not strictly conform to the spirit of the Orthodox Church.

The Council narrowly defined the position of the Patriarch as that of "the first among equals," on a par with the other organs of the higher Church administration, the Holy Synod and the supreme Church Council, of which the Patriarch is president. He is awarded a position much like that occupied by the Patriarch of Constantinople, but with some extension of rights, compared to those given to the latter by the statute of his local Patriarchate.

THE ELECTION OF THE PATRIARCHATE

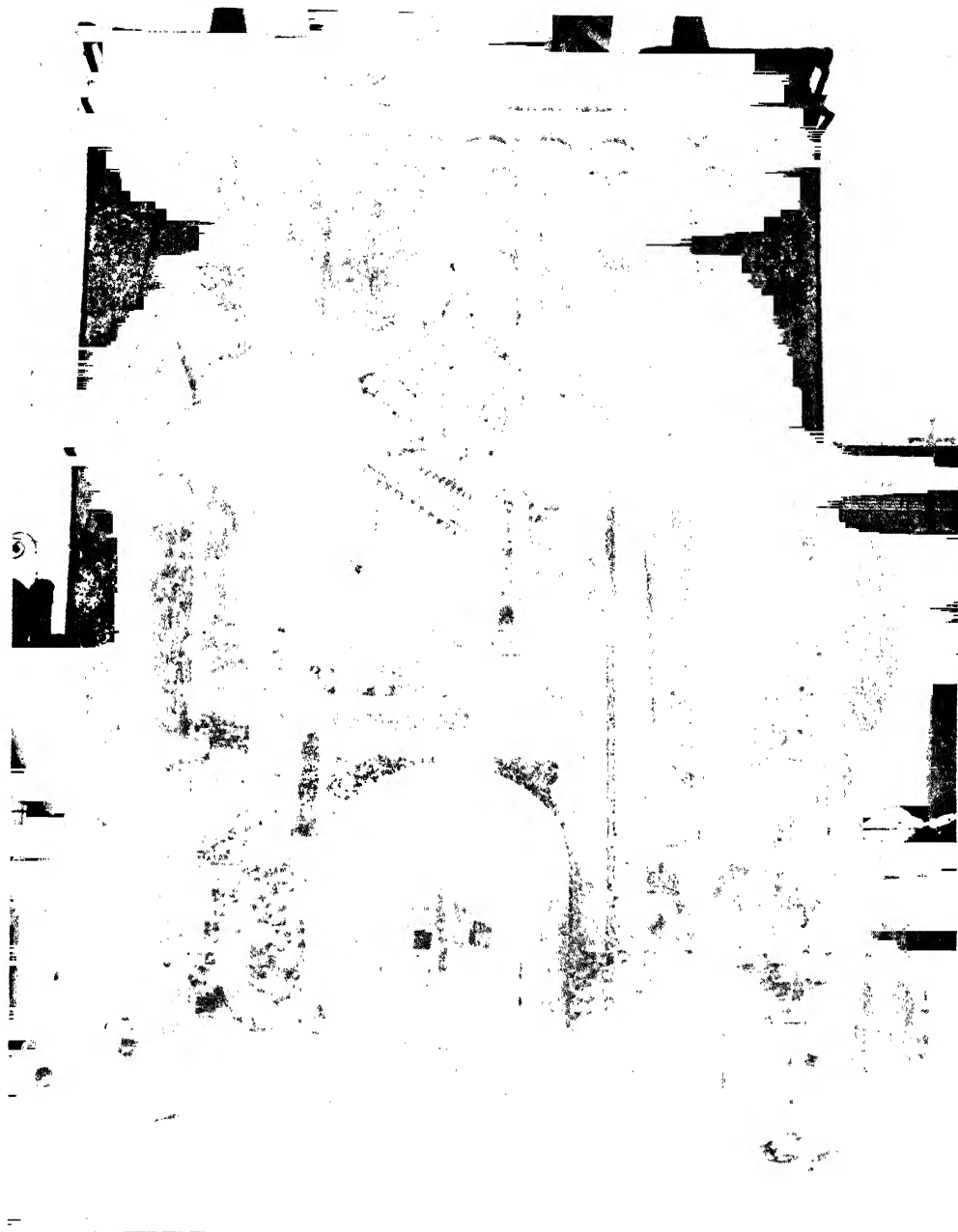
The election of the Patriarch took place during the time of the armed conflict in Moscow, when part of the city was cut off from the building in which the Council has its sittings. The election, however, took its perfectly regular course, a sufficient number of members being present.

Under strict observance of the rules for elections established by the Council, and with the participation of the members who represented all the Church elements, three candidates were chosen: Tikhon, Metropolitan of Moscow; Arsenius, Archbishop of Novgorod, and Antonius, Archbishop of Kharkov.

A few days later a solemn service was celebrated, after which three tickets bearing the three names were dropped into a special casket. Father Alexis (who is distinguishable by his black cowl and white beard and is sitting at the right in the second row of the Assembly, page 393), a holy monk and recluse, vowed to the solitude and absolute silence of the monastery of Zosimov (a dependence of the Troitsa-Sergian Laura), being thereto appointed by the Council, in the presence of the assembled people took out one of the tickets, on which was found to be inscribed the name of Tikhon.

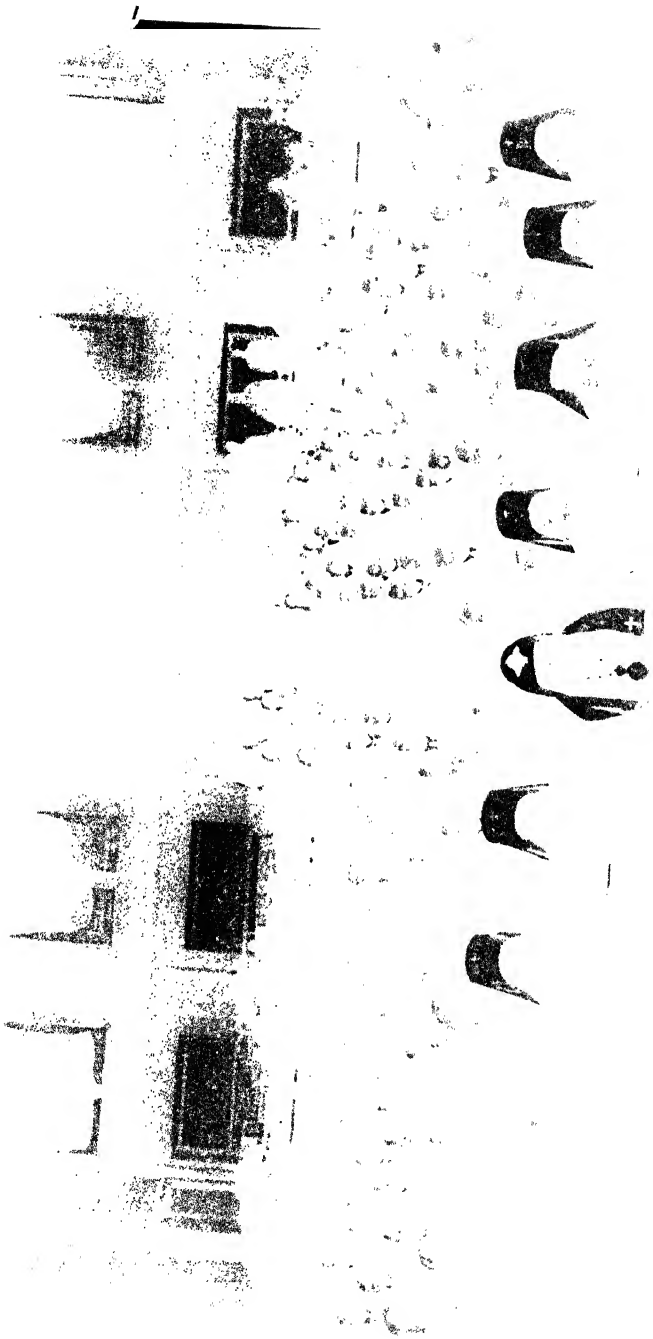
As ordained by the Council, the Most Reverend Metropolitan Tikhon was at once proclaimed Patriarch of Moscow and all Russia. He represents the new birth of the free Russian Church, the new Father.

Two illustrations which accompany this article show the Council of the Sobor in session (pages 392 and 393). At the end of the hall, within the inclosure of



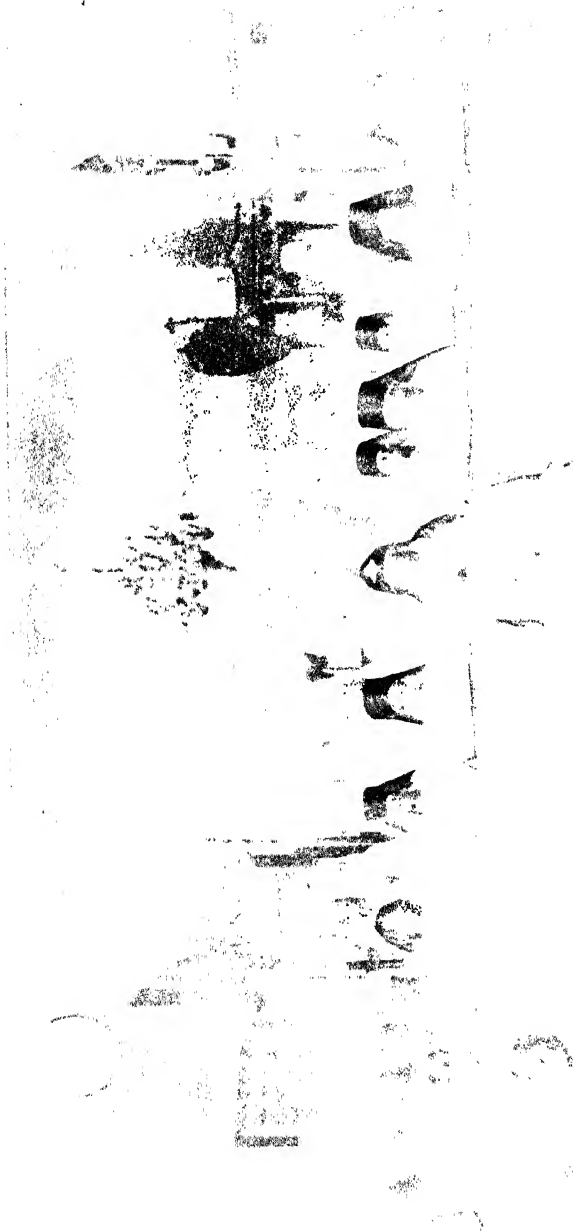
ST. NICHOLAS GATE AFTER BEING SUBJECTED TO HEAVY GUNFIRE

The case covering the ikon of St. Nicholas is ruined. The canopy above the ikon is broken and hangs by a thread. The ikon itself, just over the gate, has survived both the guns of Napoleon and of the Bolsheviks. On St. Nicholas' Day this year it was not only decorated with a garland of fresh flowers, but surrounded by a spiritual wreath of popular fervor (see page 387).



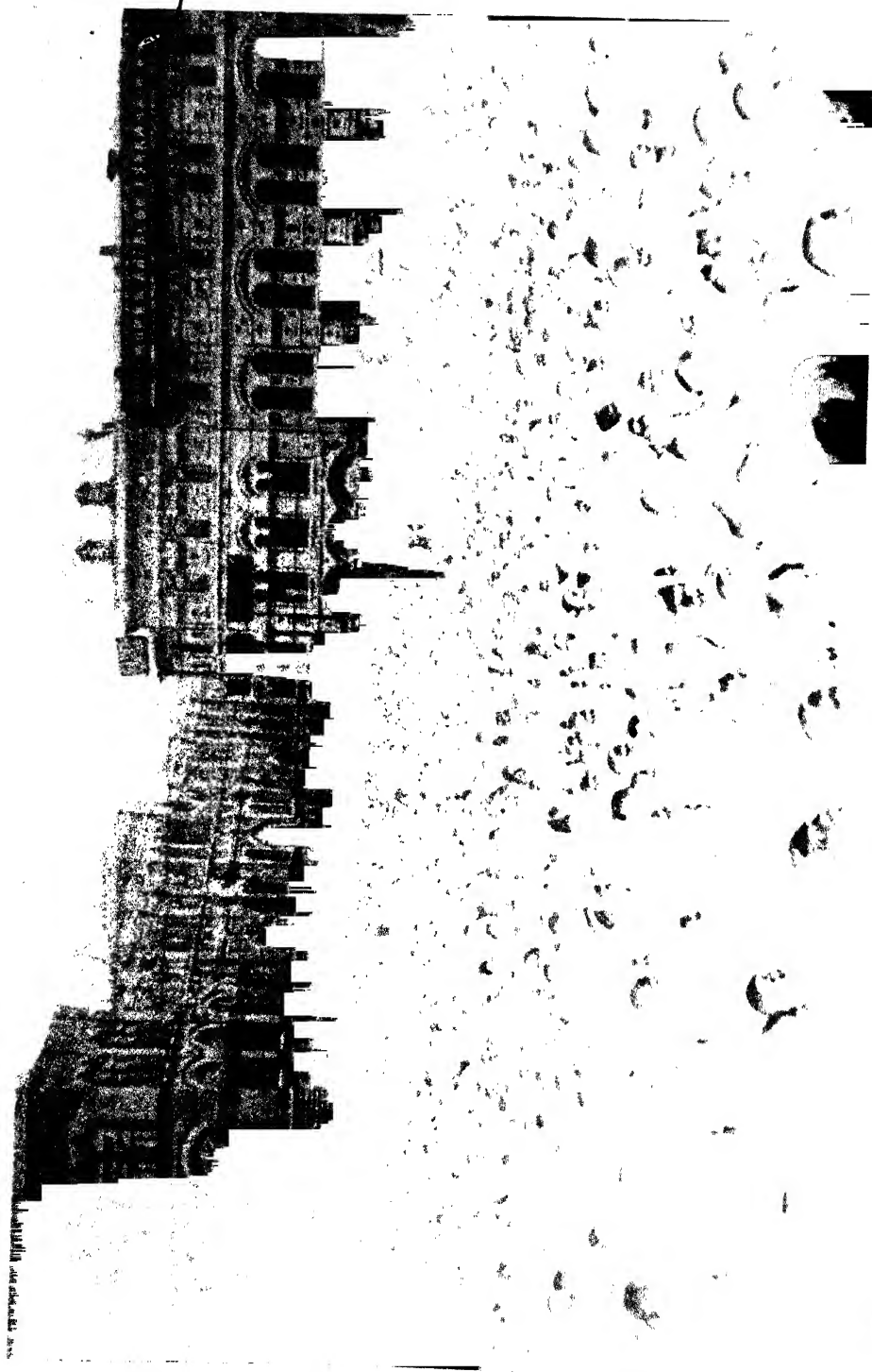
THE FIRST ALL-RUSSIAN COUNCIL OF FREE RUSSIA: IN THE CHURCH COUNCIL CHAMBER IN MOSCOW

The Patriarch and the Metropolitans are distinguished by their white cowls in the foreground. The members of the Council represent the national дума, the army and the navy, theological academies, academies of the arts and sciences, and of the universities. It is the most representative party of men assembled in Russia today (see page 395). The Council's sessions proceeded calmly, amid the violence and destruction raging on all sides.



THE CHAPEL AT THE END OF THE HALL IN WHICH THE COUNCIL SITS IN MOSCOW

The central figure is Tikhon, the Metropolitan of Moscow, who was elected President of the Sobor and later chosen Patriarch of all Russia. At his right is the Metropolitan of Novgorod and at his left the Metropolitan of Kharkov. From left to right are the Archbishop of Kherson, the Archbishop of Mogilev, the Archbishop of Grodno, and the Metropolitan of Yaroslavl, the Metropolitan of the Caucasus, the Metropolitan of Vladimir, the Archbishop of Tver. In the upper row, from left to right, are the Archbishops of Viatka and Kolonna and the Bishops of Tchernigov, Kaluga, Olonets, Kamchatka, Smolensk, and Nikolsk. To the left of the Metropolitan of Novgorod are two Vice-Presidents of the Council, Father Lubetmov and Prof. Prince Eugene Trubetskoi (see page 395).



MULTITUDES IN THE PROCESSION OF THE PARISHES ON ST. NICHOLAS' DAY IN THE RED SQUARE IN MOSCOW, MAY, 1918
The Bolsheviks know that their aims can be realized only on the ruins of the faith. The day had purposely been declared by the government to be a work day, but thousands came walking under the banner of the cross to the sound of Easter hymns.

the chapel, sit the Patriarch, the Metropolitan, the Archbishops and Bishops, the lay vice-presidents, and the secretaries. In the center sits Tikhon, the Patriarch, President of the Sobor. At his right is the Metropolitan of Novgorod, and just behind him Argafangle, the Metropolitan of Yaroslav, who, by the way, is the Russian Honorary President of the Anglican and Eastern Orthodox Churches Union. At the Patriarch's left are the Metropolitan of Kharkov and the Metropolitan of Kherson, and behind Kharkov are the Metropolitan of the Caucasus and the Metropolitan of Vladimir. They are all wearing the white cowl to distinguish them from the archbishops and bishops.

Opposite, facing the prelates, sit the other members of the Council. Speeches are made, not from the floor, but from a rostrum, on the left-hand side of the hall, facing the Assembly. The Council Chamber itself is on the second floor of the building.

The entrance hall below is the lobby of the Council, where members walk and talk together, often arm in arm, in animated discussion, and where laymen pause reverently to receive the blessing of Patriarch or Metropolitan.

Some of the bishops wear the Cross of St. George for valor on the field. In receiving the blessing a Russian opens his hands and puts them together and the prelate lays his hand in the open hands to be kissed after the blessing.

THE SANEST AND MOST DEMOCRATIC ASSEMBLAGE IN RUSSIA

The Patriarch, accompanied by a single footman, drives daily to the Sobor from his palace in an unpretentious carriage drawn by two black horses. He is often seen giving his blessing from the carriage window as he passes through the street, and there is generally a crowd of people pressing forward to receive his blessing at the door of the Council House.

The arrival of the Patriarch at the Sobor at 11 o'clock in the morning marks the opening of the session. The Assembly rises as he enters, "Many Years" is sung, and the House comes to order.

Although there are perhaps no conspicuously outstanding and dominant figures in the assembly, it reaches as a

whole the highest level of the Russian mind. Here sit men from all districts. It is an all-Russian assembly. There are many strong personalities and many men marked by singularly beautiful and consecrated devotion to their task; nor is there evidence of a desire on the part of any one to dominate, least of all on the part of the Patriarch.

I heard no uncommonly stirring speech-makers, but a good deal of clear, cogent statement. It is because there is nothing noisy or spectacular about the Council that it evokes profound respect as the sanest and most democratic, as well as the most spiritual, body of men now assembled in Russia.

In contrast to the picture Titian has left us of the Council of Trent, all the sittings are open to the public. So republican is the Sobor in its character that visitors who happened to be present when these photographs were taken were requested not to leave the hall. I have had the advantage of knowing the Patriarch and many members of the Sobor and acquiring, in intimate relationships, a knowledge of their hopes for Russia.

The election of the Patriarch is the first act of constitutional Russia. It has a precedent in the history of the Russian Church. Although not foreseen by the canons, a similar example may be cited in the election of the Apostle Matthias, of which we read in the Acts. This manner of election answers to Russian ideals, and powerfully contributed to the joyful acknowledgment of the Most Holy Patriarch Tikhon as the person indicated by the will of God.

THE NEW PATRIARCH FORMERLY LIVED IN AMERICA

The man chosen to this high and responsible service is 54 years of age. In the world he was called Vasili Ivanovich Bellavin. He was born in the town of Toropetz, in the Government of Pskov, where his father was a priest. He was educated in the Church school of his native town, and later in the Ecclesiastical Academy of Petrograd. On leaving the Academy he was appointed master of dogmatic and moral theology in the Seminary of Pskov. In the capacity of teacher, he knew how to interest his pupils by his

excellent method of instruction. In 1891, while carrying on this work, he became a monk. During the next year, 1892, he was named Inspector, and soon after Rector, of the Seminary of Kholm.

In 1897, on being consecrated Bishop, he was elevated to the See of Lyublin, and in 1898, it is interesting for Americans to recall, he was translated to the North American diocese. In America he won universal respect and took an active part in the organization of the Russian Church in North America. It was in his time that the Episcopal See was transferred from San Francisco to New York.

From America he was translated to Yaroslav in 1907. The people of Yaroslav fully appreciated the goodness of their Bishop and elected him an honorary citizen of the town. After his translation to the See of Vilna (also in 1907) Bishop Tikhon, in his generosity, made many gifts to various charitable institutions. He remained in Vilna until 1917, when he was called to Moscow.

Wherever in the Province of God he has exercised his episcopate, Bishop Tikhon has proved to be exceptional in his simplicity, wide benevolence, and purely Christian character. A gentle, strong, learned man, he has written little. He has been rather a practical church worker, an accessible leader.

He compares with the Patriarch Philip, murdered under John the Terrible, and with Cranmer in England. It is therefore a great consolation for the Russian Church that, in these hard years of the life of the people, such a prelate should have appeared at the head of the government of the Church.

THE PATRIARCH'S WAY CARPETED WITH GOLDEN FLOWERS

The consecration of the Patriarch in the Kremlin was the first free act of the Church there after the fierce artillery fire of the Bolsheviks upon the Holy Places.

At the door of the Chudov Monastery, on St. Alexis' day of this year, a little group of the faithful were waiting for the coming of the Patriarch to say the Liturgy. In place of the usual carpet spread for his entrance to a church, some one, just before he came, simply scattered dandelions in flower from the fields. In

the sunlight the broken steps suddenly became paved with gold and malachite. A delighted smile touched the face of the Patriarch, and one seemed to see in his anxious eyes a belief that in these spring flowers in the midst of all Russia's woe grew the symbol of new life for the Holy Church.

When the question of the Patriarchate had been settled, the Council proceeded to organize a system of Church administration, ordering that periodical councils should be held in the future.

An important matter decided by the Sobor before its Easter adjournment was the reorganization of parishes. The Sobor restored to the parish much of the independence which it had enjoyed in ancient times, but which had been lost in the growth of bureaucratic centralization.

The Sobor was also obliged to provide answers to many social problems. The Sobor and the Patriarch addressed epistles to the clergy, the people, and the army, to strengthen their spirit against the growth of pernicious influences from without, poisoning the life of the nation.

The actions of the revolutionary government, directed against the position and rights of the Church, met with the Sobor's resistance. The latter body protested against the confiscation of the parish primary schools and the schools which prepared for the priesthood; against the abolition of Scripture study in all schools, and against the abolition of Church rights of property.

The measures just mentioned, as contrary to the proclaimed principle of separation of Church and State, were considered by the Sobor as being acts of tyranny against the Church.

However, it was the Patriarch, and not the Sobor, who played the most important part in the general movement for the defense of Church rights.

His fearless epistles, addressed to the people, explaining the true significance of the measures adopted against the Church by the present rulers of the country, call upon the people to defend their faith and excommunicate the authors of the persecution. The Sobor upheld the Patriarch's authority as a representative of the Church in its relations with the outside world.



HIS HOLINESS TIKHON, PATRIARCH OF MOSCOW AND ALL RUSSIA

The new head of the Russian Church was at one time Bishop of the North American Diocese. It was in his time that the Episcopal See was transferred from San Francisco to New York. He was at the head of the Russian Church in this country from 1898 to 1907. A man of gentleness and strength, he focuses the forces of spiritual enlightenment in Russia.



THE PATRIARCH IN THE STREETS OF PETROGRAD, MAY, 1918

The Russian masses will never believe that the return to the Church means the revival of political and social oppression. They never confuse the eternal principles on which the Church rests with the passing political or social conditions.



THE PATRIARCH IN SOLEMN PROCESSION, PRECEDED BY THE ARCHDEACON ROSOV, THE CHALLAPINE OF THE RUSSIAN CHURCH, AND ACCOMPANIED BY OTHER PRELATES



THE PATRIARCH ON HIS FIRST VISIT TO PETROGRAD ENTERING THE CATHEDRAL OF ST. ISAAC'S

Each new manifestation of popular feeling and of the faith of the people indicates the great spiritual change which is taking place at the present time in Russia

It was a source of inestimable comfort to the devoted that the people ardently responded to the Patriarch's call and by peaceful mass demonstrations of their religious sentiments largely succeeded in putting a stop to the open campaign started against the Church.

THE CHURCH PROBLEM IN THE UKRAINE

In connection with the Ukrainian separatist movement, a group of Ukrainian public men raised the question of the separation of the Church of the Ukraines from that of Russia. It was decided to summon a special Ukrainian Church Council. As Regional Councils are provided for by the organization of the Russian Church, the Moscow Sobor did not protest against the summoning of a Sobor at Kiev, and the Patriarch sent his representative to Kiev with a message of greeting.

While the civil war which broke out in Kiev interrupted the work of the Sobor, tendencies were disclosed of a more moderate character than those advocated by the supporters of a complete separation from the Russian Church.

In the midst of the trials besetting the Russian people, mainly through their own guilt, the Church proves its vitality. It is now reconstructing its outer forms, which had greatly deteriorated during the past from Orthodox Church order. But outward forms are not vital; inner life is of far greater import. That source of inner life never ran dry in the Russian Church, in spite of the numerous defects of its outward forms, for the deficiency of which it often compensated.

Let there be no misgiving; the Church has aided Russia in every crisis. The Church which even in the nineteenth century produced such shining lights as St. Seraphim of Sarov and Father John of Kronstadt, besides hosts of others, that Church is sure to foster and develop its inner life, now that better conditions of external organization are secured.

In the present moment of confusion in Russia the Church is the only institution which stands on its feet. May not the example of the Sobor well pave the way in due time for a similar triumphant reconstruction of the Russian body politic?

AN IMPORTANT NEW GUIDE FOR SHIPPING

Navassa Light, on a Barren Island in the West Indies. is
the First Signal for the Panama Canal

BY GEORGE R. PUTNAM

COMMISSIONER OF LIGHTHOUSES

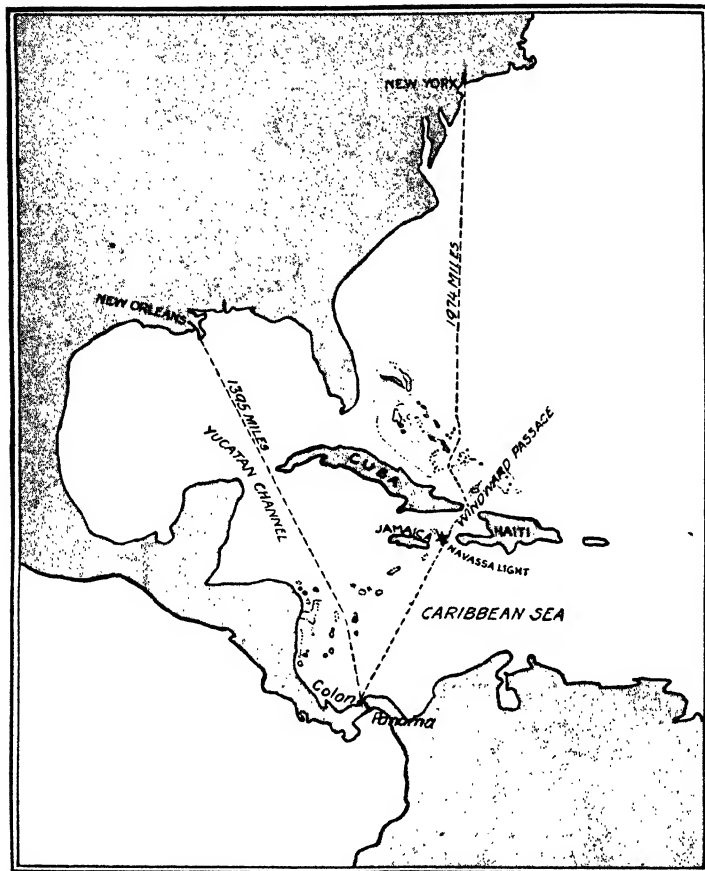
LIGHTHOUSES and other sea marks are as necessary for the safety of traffic on the sea as are signal lights for the protection of railway travel.

It is interesting to note that there are waterways which are operated much like railways. Thus portions of the Detroit and St. Marys rivers, which carry the enormous traffic between the Lakes, have practically been double-tracked by dredging and marking separate channels for up-bound and down-bound vessels, and in some narrow parts of this passage a block-system has recently been introduced, so that by means of semaphore

signals a vessel is prevented from passing until the preceding vessel has gone a safe distance. Similar systems are in use on important canals.

In normal times the shipping of the North Atlantic is operated on a double-track plan, with distinct lanes agreed upon for east-bound and west-bound vessels, and these lanes are for safety shifted to the southward during the iceberg season.

New York has a sort of four-track entrance from the sea, and of the four channels leading to the Narrows, the great Ambrose Channel is reserved for



SKETCH MAP SHOWING THE LOCATION OF NAVASSA LIGHTHOUSE AND THE UNMARKED SHOALS OF THE CARIBBEAN

Coral reefs and islets above water are shown by solid line, submerged rocks and shoals by dotted line

express and high-class traffic, and sailing vessels and tows are not permitted to use it.

WHERE OCEAN TRAFFIC LINES CONVERGE

The great increase in the shipping interests of this country and the building of the Panama Canal have attracted attention to a large area which is poorly provided with safety signals for navigation. The Caribbean Sea, once known to fame mainly by the exploits of the early buccaneers, is now a region where ocean traffic converges from north, east, and south toward the Panama Canal.

The northwestern part of this sea is strewn with rocks, coral reefs, and submerged dangers, unlighted and unmarked,

a constant menace to shipping from New Orleans and the Gulf, which must pass through lanes between the reefs, and from New York and the North Atlantic coast, which must go close to several of these dangers.

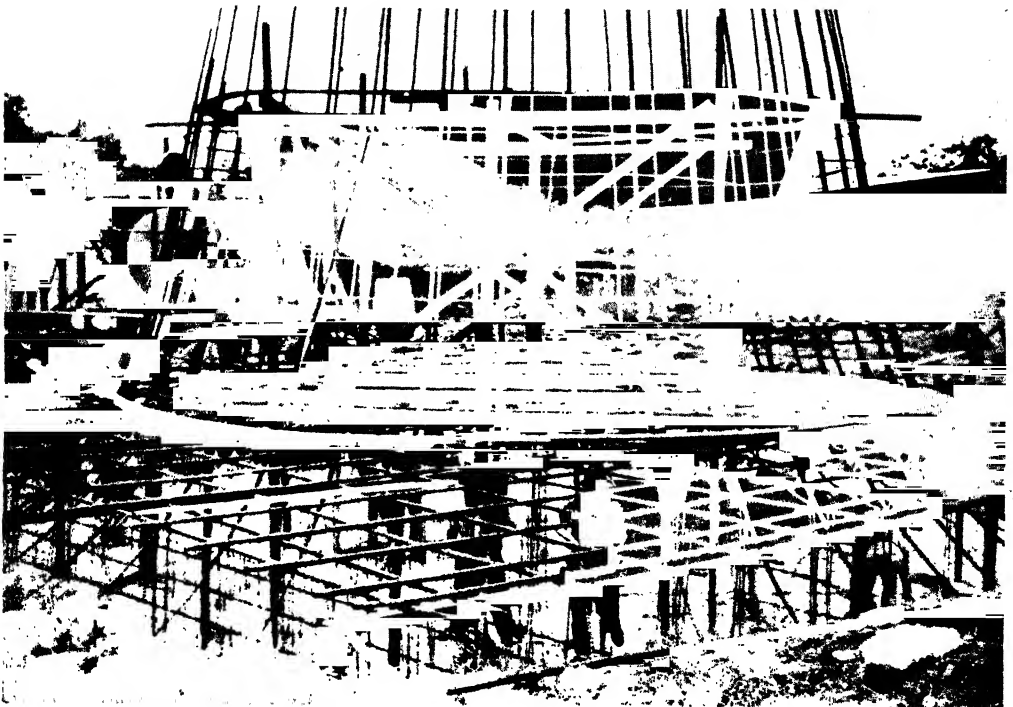
On one of these dangers, Navassa Island, 600 miles north of Colon, the first signal for the Panama Canal has recently been placed. On this barren and uninhabited rock the United States Light-house Service has built a lighthouse of unusual type.

The main route to the canal from our Atlantic seaboard is between Cuba and Haiti, through the Windward Passage, and Navassa Island, lying between Haiti and Jamaica, marks the southern approach to this passage, and is the first landfall for vessels from Panama cross-

ing the Caribbean Sea. The importance of its position with respect to shipping to and from the canal caused the United States to undertake the building of a light station of the first class on this inhospitable rock.

NEW LIGHT SWEEPS AN AREA AS LARGE AS DELAWARE

After many difficulties of construction, due to the inaccessibility and character of the island, on October 21, 1917, the light was first shown from the new concrete tower. Every night since then two beams of 47,000 candlepower have swept around the horizon each 30 seconds with clocklike regularity. Instead of a dark rock, which had loomed in the night in



Photograph by F. C. Hingsburg

THE BEGINNING OF THE CONSTRUCTION OF THE TALL LIGHTHOUSE, SHOWING THE STEEL REINFORCEMENT IN PLACE FOR THE FOUNDATION AND BASE OF THE TOWER

The steel skeleton, around which the concrete of the tower was poured, consists of 40 vertical steel bars, banded by a spiral of round steel bars, with loops one foot apart, wired to each vertical bar.

this passage, threatening mariners since the days of the early voyagers, these great rays now flash out friendly guidance to the seamen of all countries, regardless of nationality; the beams of this light have been seen 29 sea miles away, reaching nearly to the Haitian coast, and they sweep a sea area of about 2,200 square statute miles, as large as the State of Delaware.

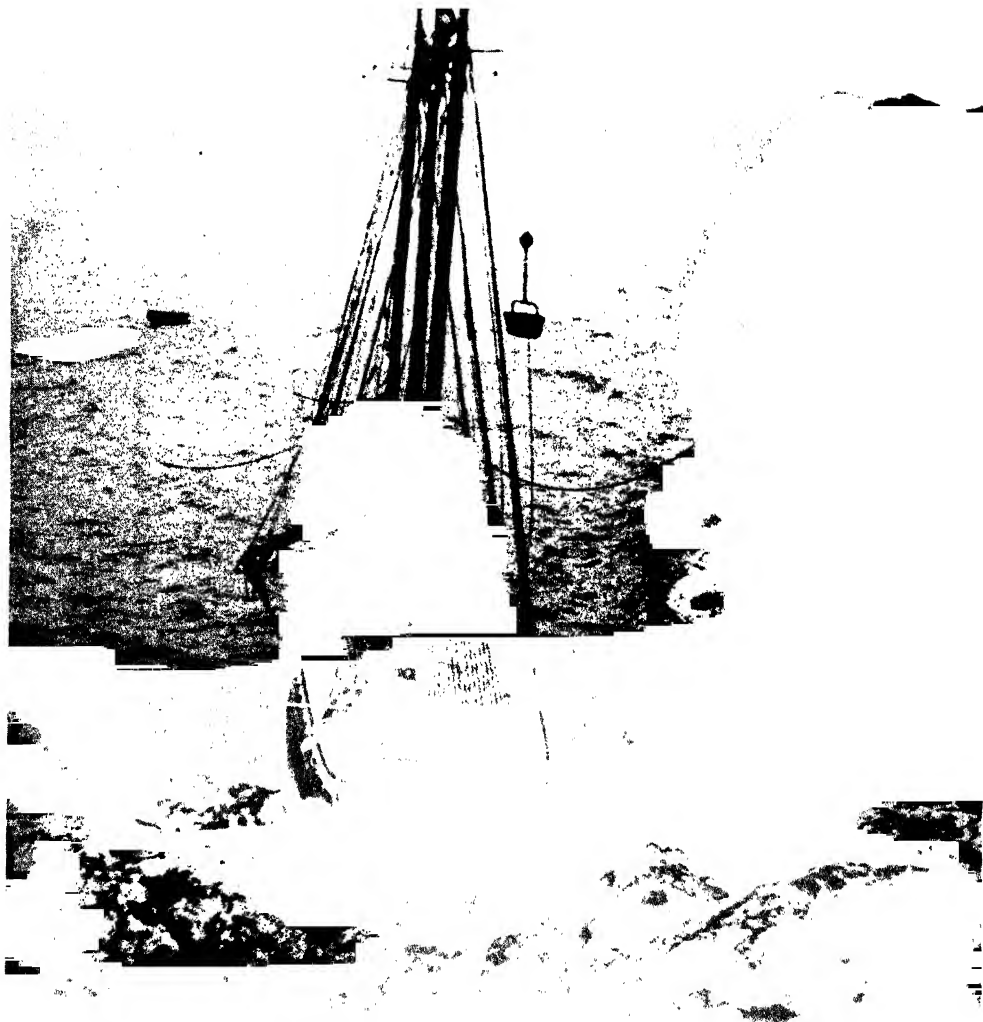
Navassa light, on this rock in the center of one of the principal international sea passages and 500 miles from the American coast, is the most important lighthouse built by the United States in the last quarter century.

A TOWER TO WITHSTAND HURRICANES AND EARTHQUAKES

Navassa Island has the outline of an oyster shell and is slightly more than a

mile in area. As the island rises fairly abruptly on all sides, forming a roughly flat tableland about 200 feet above the sea, it was necessary to build a tower 150 feet in height, in order that the light might "see over" the edge of the plateau and not be obscured to vessels in the vicinity of the island, unless close under the cliffs. The tower was placed on the highest part, bringing the light 395 feet above the sea.

The lighthouse tower was designed to withstand West India hurricanes as well as earthquakes, and the lower sections have massive proportions, the base being 25 feet in diameter, with walls over 6 feet thick. It is built of reinforced concrete, one of the tallest towers yet constructed by this method; it is of simple and dignified design, bell-shaped at the base, and above that a simple cylinder to



Photograph by Thomas Sampson

NAVASSA ISLAND LIGHT STATION, WEST INDIES: SCHOONER IN LULU BAY
UNLOADING SAND

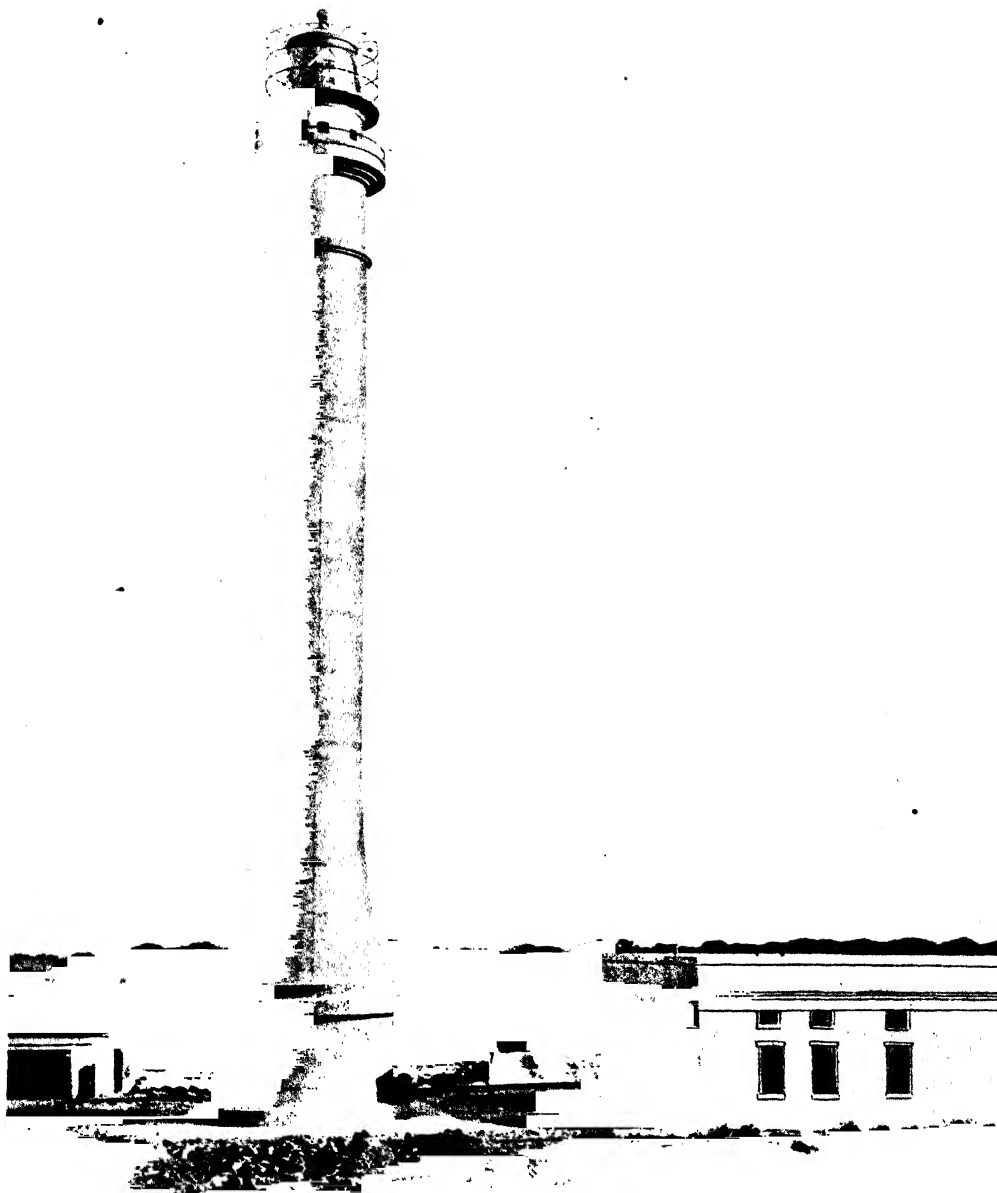
A little nook called Lulu Bay, with the schooner moored to the cliff; this is the only landing place available on Navassa Island. All the supplies and material for the lighthouse construction, as well as the workmen, were brought to the island by this little schooner, which was the only means of transportation for the year and nine months that the work was in progress.

the watch-room gallery. The use of this structural material has resulted in a much more slender outline than has been necessary in masonry lighthouses.

Almost everything required for this work had to be brought from a distance; the skilled employees were sent from the United States, together with all special

supplies and equipment; the laborers came from Cuba and Jamaica, and it was even necessary to bring from Jamaica all the sand and most of the water used in construction.

The nearest ports were Guantanamo, Cuba, 90 miles, and Kingston, Jamaica, 110 miles distant. No good landing ex-



NAVASSA LIGHTHOUSE

Photograph by F. C. Hingsburg

Built by the United States Lighthouse Service, of reinforced concrete, on an uninhabited island in the West Indies. The concrete tower is 150 feet in height. The dwelling for the keepers is shown to the right.

ists on the island, so that the little schooner that was used to bring supplies and men had to be moored under the rocky cliffs, when weather favored, and the cargo hoisted onto the shelf above; this small craft had narrow escapes from hurricanes, and there were many days when it was impossible to land.

On one occasion, after being damaged in a storm, the schooner with her load of supplies put back to Jamaica, and there was apprehension as to the food on Navassa, but this reassuring report was received: "The last flour was used for making bread on Friday. There were sufficient rations on hand to last through Sunday, and with goats, wild pigeons, fish, etc., together with a pig and a number of chickens which are kept here, we were in no serious predicament."

An unusual feature in lighthouse building, a radio equipment, much facilitated construction.

Men quickly tired of the monotonous life. On account of climate and difficulty of transportation, very little fresh food was available, and the workmen persistently grumbled. The excessive heat soon diminished their efficiency. The transportation of materials from the landing place to the site was a most burdensome task, as this had to be done largely by men shoving the loaded cars on the work railway.

ISLAND RESEMBLES A PETRIFIED SPONGE

Navassa is one of the strangest pieces of territory owned by the United States. It is a remarkable formation of volcanic limestone, completely riddled with holes and pockets, some of great depth and having no visible bottom. These holes are so numerous that one can walk only with great difficulty.

There is a total absence of water, and no watercourses or lakes, as rain is immediately absorbed by the cavities. The whole island has the appearance of a great petrified sponge. There is a growth of stunted trees and underbrush on the high plateau, and the island has some animal life, wild goats and wild cats, doubtless descended from those brought here

when the island was occupied, and numerous seabirds and land-crabs.

UNITED STATES' TITLE TO ISLAND RESTS ON MURDER-TRIAL DECISION

It is a curious fact that the title of the United States to Navassa Island rests on the decision in a murder trial. Although uninhabited and long abandoned at the time the lighthouse work was undertaken, Navassa was for some years actively occupied. The pockets and surface of the island contained a large deposit of a phosphate earth and guano.

Under the guano act of 1856, one Peter Duncan presented a memorial to the Secretary of State stating "that on the first day of July, in the year of 1857, he did discover a deposit of guano on an island or key in the Caribbean Sea not occupied by the citizens of any other government, and that he did take peaceable possession of and occupy said island or key of Navassa in the name of the United States." These deposits were worked by a company for a number of years, up to 1898, and the ruins indicate an elaborate plant for this purpose.

In 1889 about 150 men were employed on the island, and on September 14 of that year a riot occurred, in which the superintendent and several of his assistants were killed. The frigate *Kearsarge* took the murderers off the island and they were tried in Baltimore.

The defense set up the plea that the island was not an American possession and that the court had no jurisdiction, but the Supreme Court denied this plea and the murderers were executed.

A concrete dwelling, in the Spanish style, with a large open patio in the center, furnishes comfortable quarters for the families of the three keepers who carefully watch this, one of the loneliest of the sea signals of this country. They see many a passing ship, but can expect supplies and mail only when the supply steamer visits the island, a few times a year.

The matter of marking other dangerous reefs of the Caribbean Sea for the protection of the increased shipping is now receiving special consideration.

COAL—ALLY OF AMERICAN INDUSTRY

Following the Nation's Annual Output of 735,000,000 Tons of Fuel from Prehistoric Ages to Its Arrival at Tidewater

BY WILLIAM JOSEPH SHOWALTER

ONE who has not wandered through the seemingly endless reaches of the innumerable man-made caverns of the coal regions, and there studied first hand the tremendous industry of harvesting the solidified sunbeams planted for humanity by a bounteous Providence in the Carboniferous Age, cannot appreciate the vastness of that industry nor its meaning to the American people.

To see them gathered at the rate of more than two million tons a day, transported hundreds of miles, and then, under the alchemy of science, transmuted into a thousand forms—heat for the fire-side, light for the darkness, motion for the railroad train, power for the factory, fertility for the soil—is an illuminating lesson, showing how man, the creature of Nature, through science makes her wonderful forces his servants.

Under his touch coal becomes comfort in the home or death at the battle front; yields a corrosive acid that burns like fire or a sweetness that makes sugar seem insipid; gives off a gas that smells like a bad egg, but is as harmless as a chicken; is transformed into colors that make the rainbow envious of their brightness and variety, and into explosives that make the thunderbolt jealous of their power.

THE MAGNITUDE OF AMERICA'S COAL NEEDS

The first thing that impresses one who studies the coal situation in America is the well-nigh inconceivable proportions of the nation's demands for fuel. The government estimates that the requirements for the current year will reach the enormous total of 735,000,000 tons.

So huge is this figure that it were almost as futile to use tons as units as to

measure the distance around the earth in inches. Even the number of carloads mounts so far up into the millions that they become meaningless, and trainloads are only a little better.

About the only way in which one can visualize this demand is to build a mental bin capable of holding enough to meet the national need. If this bin be made with each of its four sides measuring a thousand feet, it will have to be more than thirty-three thousand feet high—overtopping Mount Everest, the tallest mountain in the world, by nearly a mile. Or, if the fuel were put into a coal pile of normal slope, with a base of twenty feet, that pile would have to be 96,000 miles long—nearly four times around the earth.

Little less startling than the size of the national demand for coal are the proportions of the excess requirements of war times over peace times. Taking the average annual demands of peace times and comparing them with the demands of the past year of war, one finds that the extra coal required in the United States as the result of the war reached a total of 210,000,000 tons.

Here again the brain reels in its effort to comprehend the meaning of such vast figures. They mean an excess tonnage amounting to 4,333,000 carloads. These cars would require a string of engines nearly a thousand miles long to pull them and would form a train which, moving at a uniform speed of twenty miles an hour and never stopping, would require seventy-five days to pass a given crossing.

ARMY OF MINERS NOT GREATLY REINFORCED

And yet the force of miners upon which devolved the task of meeting this almost unbelievable increase in the na-



Photograph by J. Horgan, Jr.

BENEATH THESE BARE ROCKS LIE THE SOLIDIFIED SUNBEAMS STORED BY PROVIDENT NATURE FOR RESOURCEFUL MAN

It is only during a few centuries that coal has been used to any extent, although Roman mines in England point to its use in those times. William Penn paid \$2,500 for the anthracite region. Coal already taken out has had a tide-water value of seven billion dollars, and there are five tons in place for every one thus far removed. Ninety-eight years ago the total shipments from this region were only 365 tons. Now the production is 90,000,000 tons per year.

tion's requirements was very little, if any, larger than in peace times. Tens of thousands of miners had left the coal fields for the factories or for the battle front, and with all the high wages paid, it was next to impossible to maintain the army of anthracite and bituminous workers at peace-time strength.

Let us go into the coal region and down into the mines and see the sturdy harvesters reaping the grain of heat that Nature stored up against the day when the forest should find itself unable to supply mankind with fuel.

THE ANTHRACITE FIELDS

We will first visit the anthracite fields, that wonderful region in Pennsylvania which lies to the north of Reading, to the south of Carbondale, east of the Susquehanna and west of the Lehigh rivers. Scranton and Wilkes-Barre are the center of the upper field, Hazleton of the middle field, and Pottsville of the lower.

Were all of the coal beds in this remarkable region laid out in a compact body, they would cover an area only twenty-two miles square. Yet out of such a small area have come billions of tons of coal and culm, the former to cheer a million firesides, and the latter to dot every landscape, and to serve as monuments to remind us of the patient toil of hundreds of thousands of men through scores of years.

A visit to a modern colliery is an impressive experience. Depending on its size and the labor available, it will bring from one to two full trainloads of coal up out of the bowels of the earth every day, put the coal through the breaker, where the sheep of fuel are separated from the goats of slate and culm, and load it into the cars ready for market.

We shall be safe even if we do go down a thousand feet into the earth and roam about in an underground plantation whose area may be judged by the fact that there are eighty-five miles of railroad track in it. The colliery superintendent, a rare old Welshman who has been mining coal for twenty years, and the district engineer, a fine youngster who has had his engineer degree from Lehigh, will accompany us.

There are some things on top of the ground that will be even more interesting

to us when we go below—particularly the hoisting engine and the ventilating fan, for without the one we would not be able to ride back to daylight, and without the other we would stand a chance of being "gassed" over here in peaceful America.

HOW A MINE BREATHES

The giant fans fly around with a rim speed of a mile a minute, two of them, with a third in reserve for emergencies. If it were not for those fans the air in the mine would become so laden with gas and dust that if it did not explode and transform the whole mine into a charnel-house, it would develop choke-damp and suffocate us. These fans are to the mine what the involuntary muscles of the chest are to the lungs—they make it breathe.

Every mine has two shafts—the hoisting shaft and the air shaft. In order to keep the air in the mine free enough from gas to permit miners to work in safety, enormous quantities of fresh air must be sent down the one shaft and corresponding quantities, gas-laden, drawn out of the other.

In America this is usually accomplished by exhaust fans drawing the used air up the air shaft. This type of fan tends to make a vacuum at the top of the shaft, and the weight of the atmosphere drives the fresh air down the hoisting shaft and the stale air up the other.

If that which goes down the hoisting shaft were allowed to take its natural course, it would make a bee-line for the air shaft and rush up into the fan-created vacuum at the top. That would leave the foul air in every other part of the mine and accomplish no great good.

So, means have been found to lead air around a mine just as effectively as one might lead a horse. By the use of doors and curtains and bridges, the mining superintendent is able to take the current of air that rushes down the hoisting shaft and make it move here and there, hither and yon, into every nook and cranny of the mine, driving the foul air before it as it goes. It seeks out every gas pocket and forces itself into every chamber.

It may very well be imagined that a mine with enough tunneling to call for 85 miles of railroad track needs a great deal of air, and that this air, to reach



THE MULE STABLES IN A COAL MINE

Often down a quarter of a mile in the earth are stables kept as clean and as sanitary as a race-horse barn. The mule is brought down the shaft in the cage, or elevator, blindfolded, and he stays down until he dies, or is rendered "hors de combat" by accident. If he is sick there is a "barnyard" covered with white sand—the only touch of white to be seen—where he can roll and rest to his heart's content.

every part, must cross its own path many times, just as a man, covering all four sides of every block in a city, would have to cross his own tracks. In the mines this is accomplished like a railroad crossing by bridge instead of at grade. When a crossing point is reached, there is a tunnel opened up through the solid rock above the roof of the mine, and through

this the air rushes at right angles to its former direction.

To get the air properly distributed, it is necessary to make splits, so that the current can be divided and sent into different sections of the mine. These air splits are doors which permit only half of the air coming their way to pass. The remainder must find some other way through.



Photograph from U. S. Bureau of Mines

LINING A MINE WALL WITH ARTIFICIAL ROCK

One of the frequent causes of mine cave-ins is the weathering of the slate of the roof and side walls. It gradually crumbles or scales off and suffers a consequent weakening, which may finally bring disaster. The cement gun covers the slate with a thin plaster, which effectually shuts out the air and leaves it as unexposed to deterioration as it was during the countless ages before the coal was removed.

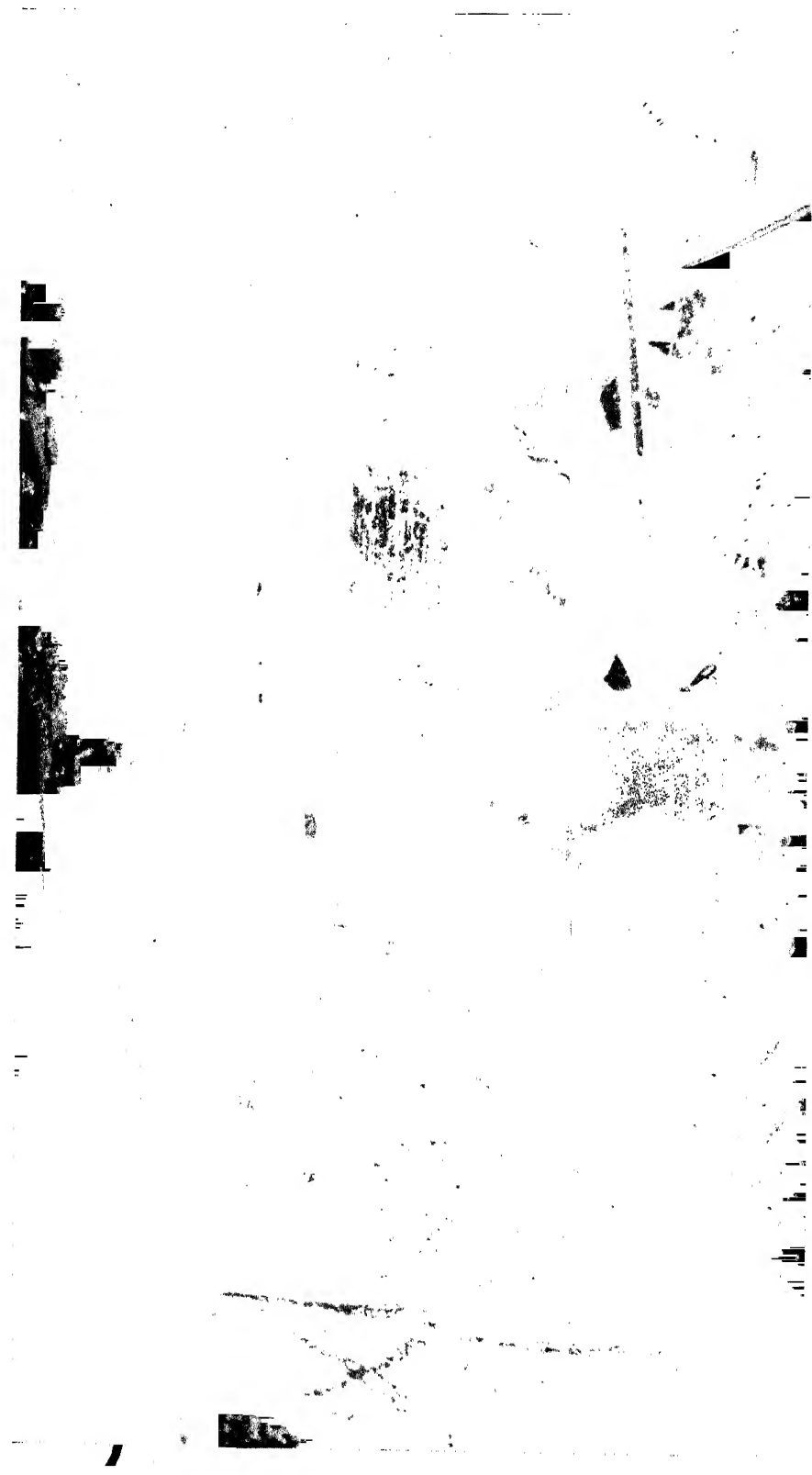
Before going down into the mine the superintendent will give us each a miner's lamp—at this particular mine the lamp is a tiny teapot affair containing sperm oil and with a spout full of cotton yarn. Also, he will equip us with electric hand-lamps, to be used in any emergency. Then he will stick an extra ball of yarn in his pocket and we will start for the "cage," which is the mine name for an elevator.

THE DESCENT INTO ANTHRACITE

We step on, he presses a button, and the hoisting engineer is notified that we are ready to go down. Suddenly the cage seems to drop; then it seems to stop, and the walls of the shaft appear fairly to fly upward past us. Up, up, up they fly, disclosing this stratum of rock and then that.

Arriving at the bottom, we soon find that a coal mine is planned like a city. There is one main street, or entry, and it has been laid out with the nicety of a grand boulevard. Parallel with this are other entries, and across these entries run other streets, at right angles, usually, which are called headings. Lining all these headings as houses line the streets are the chambers, or rooms, in which the miners work.

When we stop at the bottom we feel ourselves in a small-sized hurricane. It is the air rushing down the shaft and starting through the mine on its mission of purification. Setting out down the main entry, along a railroad track, we soon hear a clanging bell and a whistle, and presently there looms out of the darkness a yellow light. As it approaches, we see the outlines of what appears to be a



Photograph from U. S. Bureau of Mines

UNDERCUTTING A BREAST OF COAL WITH A COMPRESSED-AIR PUNCHER

There are many types of cutting machines for overcoming the wasteful methods of "shooting from the solid" or blasting the coal loose without cutting around it first. Some are driven by compressed air, some by electricity, some by steam generated on top of the ground. One cave-cutter is not unlike a mowing machine. A cutter-bar reaches out from the driving mechanism and has, instead of pitman-operated sickles, an endless chain revolving around sprocket wheels. On this chain coal knives or picks are fastened, and as they travel along they cut away the coal. When a cut, such as the one being made in the illustration, is finished from one side of the chamber to the other, holes are drilled and light blasts put in. When fired, these blasts cause a great block of coal to break loose and fall to the floor, where it is broken up and loaded into cars.

long, round boiler creeping along the rails; but in reality it is a compressed-air engine—for compressed air, rather than electricity, is the haulage power in this mine.

Upon the surface there is a great air pump that keeps crowding the molecules of air together closer and closer until they push away from one another with the strength of a thousand pounds to the square inch. Think of this, invisible, imperceptible air being packed so tight that it tries to burst out again with a strength that would make a Samson seem a weakling! Put a cubic foot of this air into a cask and the pressure on the sides would be 432 tons.

KEEPING TAB ON THE MEN IN THE MINE

When the miners go down to their work in the morning they are checked in by the "fire boss." He is a foreman who has charge of fire prevention and of the safety of the miners while at their several tasks. During the night every section of the mine has been inspected to see whether there is gas anywhere. If there should be an entry, a heading, or a room that is laden with gas, the fact is noted on a slate which is exhibited to the men as they file past. If there is no gas, it is said that the day starts with a clean slate, which is both figuratively and literally true.

The brass check of every miner who enters the workings is taken and hung up on a board, opposite the number of the room in which he is digging coal. If he has a helper, his check—somewhat different—goes up too; and if there are two men working as partners, that fact is shown on the board also.

By this careful checking system the location of every miner and every helper in the mine is known all the time, and in case of explosions, fires, or falling walls the management always knows who is in and who is out.

We walk and walk until we begin to feel as though we might be coming out over in China or France, and then we come to the rooms or chambers—for all the coal in the neighborhood of the hoisting shaft has gone up in heat and smoke long before now and this mine is far-flung.

These rooms or chambers might be monks' cells in some catacombs for the living. Here the miner bores and blasts and digs away the coal and loads it into the mine cars. If he has a helper he does not need to do the loading himself, but in these latter days helpers are not much in evidence. The car holds about 6,000 pounds of run-of-the-mine coal, and a miner is supposed to fill two of them a day.

When the car is loaded the miner puts his number on it, and presently, with much ado, there comes up the heading and into the passageway leading to the chamber a string of mules walking tandem, or single file, and dragging an empty car behind. They pull out the loaded car, set the empty one where the miner wants it, and go back the way they came, with the load of coal.

There are other strings of mules, also, and they distribute the empties and mobilize the loaded cars from and at given points. Then the compressed-air engine comes along and makes up a train of loaded cars after dropping one of empties ready for distribution. The coal trains are pulled down to the hoisting shaft, and one by one the cars go to the surface, an empty coming down as a loaded one goes up.

THE DANGERS A MINER FACES

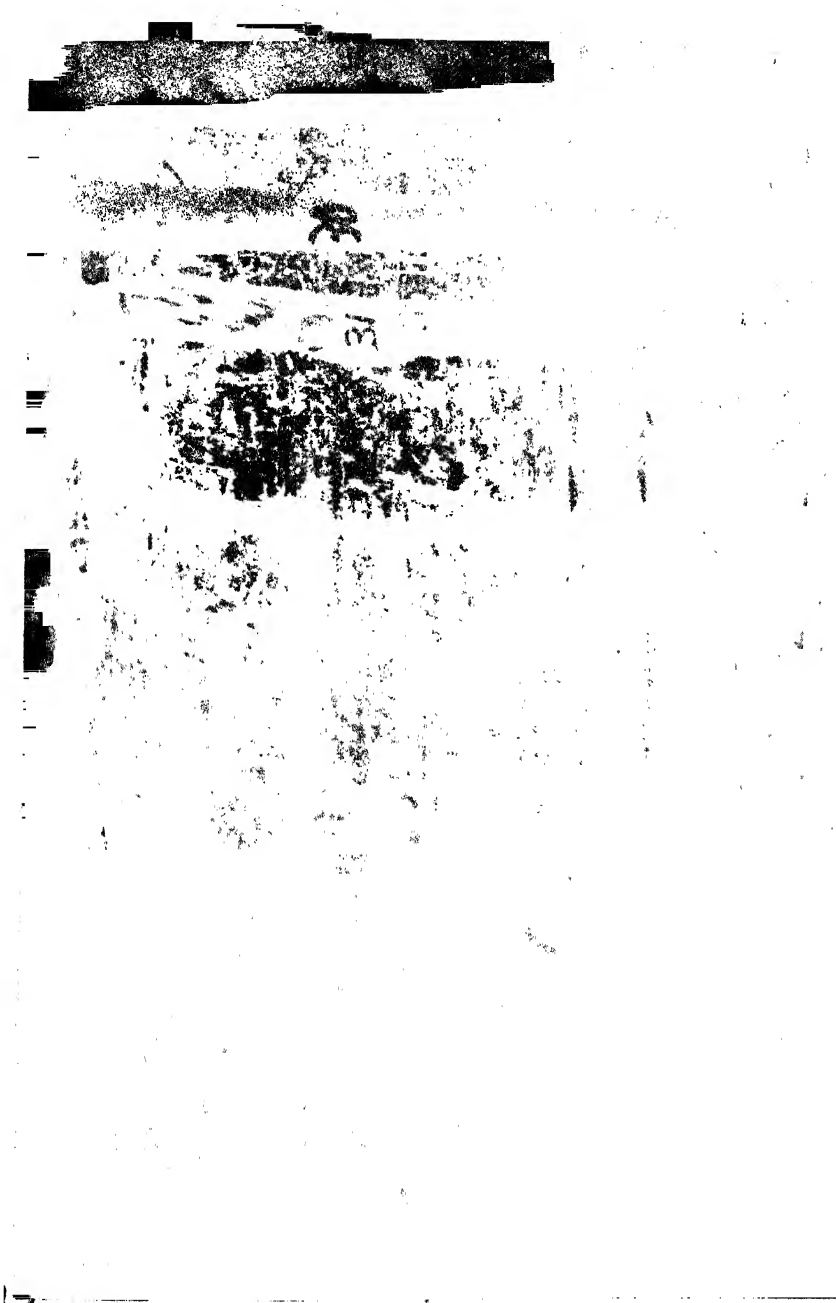
The dangers the miners have to encounter are many. Their work is individualistic and solitary. Who knows whether they are careful in handling their explosives? Who knows whether they keep a proper watch for signs of gas? And yet one careless miner in one little chamber may start a conflagration that will sweep the mine and make scores of victims. He may disdain to screw off the cap of his powder can and pour out the powder in a safe, orderly way, preferring to cut a jagged hole in the top of the can with his pick and to pour out the powder through it. He may disdain to tamp his charge home with clay and may use a lot of paper and coal dust instead. All that goes very well until there is fire-damp present, and then—and then the world may read, in newspaper headlines across the page, of a terrible disaster.



Photograph by J. Horgan, Jr.

A JACKHAMMER DRILL AT WORK, DRIVEN BY COMPRESSED AIR

With one of these machines a miner can drill as many holes in one hour as he could in eighteen with the old-fashioned hand drill,



Photograph from U. S. Bureau of Mines

TAMPING HOME THE BLAST

Having drilled his holes in the "breast" of coal in his "chamber," the miner is now ready to blast down several mine-car loads. It is back in these places that the mine fires so often begin. One miner, careless and indifferent, may undermine every precaution and safeguard that can be taken and provided by the company and all the other miners together. And the pity is that often familiarity with gas and powder and fire breed contempt for their dangers, with the resultant horrors of a mine disaster (see page 413).



Photograph by J. Horgan, Jr.

ELECTRIC MECHANICAL LOADER

Once every operation between the unmined coal in the seam to the loaded mine car was done by hand. But the mechanical age has dawned even in the depths of the earth, and with jack-hammer drills, coal-cutting machines, and mechanical loaders the individual output of the average miner is increasing. Mining machinery is in the harvest fields of heat what the self-binder is in the gathering of grain.

THE THREE DEADLY MINE GASES

The three principal gases encountered in mines are choke-damp, or carbonic acid gas; fire-damp, or marsh gas; and after-damp, or carbonic oxide gas.

Choke-damp is heavier than air and settles in the lower parts of a mine, just as water seeks the lowest level. It kills by suffocation. It may be dipped up with a bucket like water, and its presence may be detected by lowering a light into the cavity where it exists, as it will put out the flame immediately. Individual miners are killed by it, but it never explodes.

Fire-damp is a most peculiar gas. If you mix less than 85 per cent of air with it or more than 95 per cent of air, it will burn but will not explode; but if it be mixed in the proportion of 88 or 89 parts air to 11 or 12 of fire-damp, the combination becomes one of the most terrible of explosives.

Eternal watchfulness is the price of safety. When the coal is blasted down, fire-damp pockets are often opened up, and the thin, trickling, hissing sound tells the miner what has occurred. Miners test the chambers, headings, and entries for fire-damp with a lamp. If the blaze becomes elongated and blue at the base, that gas is present.

An explosion of fire-damp is one of the most terrible disasters that can occur in a mine. In an instant the dark, man-made caverns are lighted up from end to end by a lightning that beggars descrip-



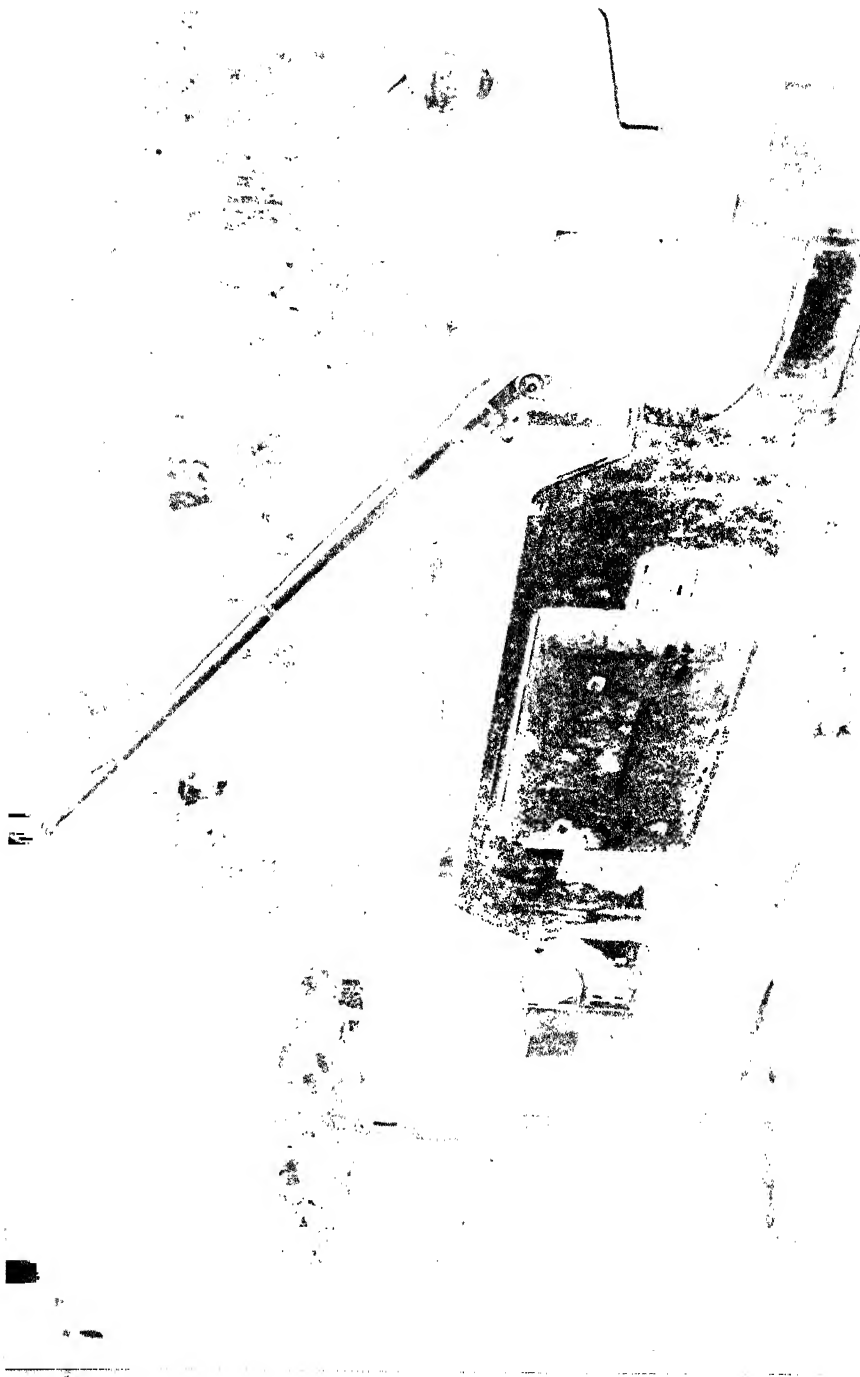
Photograph from U. S. Bureau of Mines

HOW NOT TO PREPARE A BLAST

This miner, pouring powder out of a jagged, pick-cut hole in his can, while his cap lamp burns brightly, is not only taking a chance with his own life, but with that of every other miner in the workings. This is a picture of what the miner should not do. But thousands of lives have been sacrificed by just such methods.

tion. "The expanded gas drives before it a roaring whirlwind of blazing air," as one who has survived the catastrophe tells us, "which tears up everything in its progress, burning many a miner's body to cinders, entombing others, and, rushing to the shaft, it wastes its fury in the shower of dust and stones and timbers it blows high into the air."

A tragic story might be written of mine disasters which fire-damp has caused and of the tens of thousands of miners who have given up their lives in such hor-



Photograph by J. Horgan, Jr.

AN ELECTRIC LOCOMOTIVE MOVING A MINE TRAIN

Many a mine mule has bee-hawed with delight as his life sentence to hard labor in an underground prison has been commuted by the arrival of electric transportation. The sharp-nosed sticks in the foreground are "sprags" to be stuck between the spokes of the car wheels to brake or "scotch" them. They have left their imprint upon the vernacular of the coal region, since to "sprag" a scheme is effectually to block it.

causts; but as the years go by greater care is used, better ventilation is maintained, and the disasters, happily, are growing fewer.

After-damp is one of the deadliest of all gases encountered in mines, but fortunately it does not occur except following fires. It is so subtle that the miner is powerless to escape its attack when he realizes its presence. Odorless, or possessed of a mere hint of violet, its victims experience an exhilaration at its onset that seems to them only a sensation of feeling unusually well; but so quick and deadly are its effects that before this feeling passes, the victim is wholly within its grasp.

HAND METHODS PRODUCE ANTHRACITE

In the anthracite region mining is still done principally by hand. Some jack-hammer drills have been introduced and some electric coal-cutting machines; but hand methods still produce most of the anthracite. The jack-hammer drill is an instrument which bores the blast-holes by power. With one of these drills a miner is enabled to bore as many holes in one hour as he can bore in eighteen with a hand-drill. Among the illustrations of this article (see pages 414 and 416) will be found pictures of cutting machines, jack-hammer drills, mechanical shovelers, etc.—labor-saving machinery that is now working wonders in the productive powers of the miners.

If space permitted we would follow our fine old Welsh guide up into the "kidney" of the mine and see a second layout of entries, headings, and chambers in a half-way station seam; we would contrast the new steel timbering of the mines with the old wood timbers coming from the South; we would stop to look at the mule stables, as clean and as sanitary as any stables you ever saw, with a sand-floored yard, where the sick ones may roll and rest to their hearts' content.

But let us follow the coal up the shaft, and through the breaker in the case of anthracite, and through the tippie or dumping house in the case of bituminous.

When we reach the top again, we note the layout of the breaker plant, where the coal is cleaned and sorted into the several commercial sizes. The first thing

that impresses us is that the mine-owners are almost as careful in saving coal as a miser is in hoarding his gold.

The loaded mine cars are rolled off the cage by hand, and the breaker building is so situated that the cars run down to it by gravity. As the cars roll down to the breaker hoist, which may be either a vertical lift or an inclined plane, boys "sprag" or "scotch" them and let them down to the hoist one by one.

Going up to the top of the breaker, we see the coal as it comes from the mine, with all its slate and culm, mechanically dumped, a carload at a time, upon the oscillating bars, which begin the process of separating the coal from the worthless material and the assorting of the former into groups according to size.

There are eight different sizes of coal now in general use—broken, egg, stove, and chestnut, which are the domestic sizes, and pea, buckwheat, rice, and barley, which are steaming coals. They range from four inches in diameter for broken to one-sixteenth of an inch for barley. Of course, there are as many pockets at the railroad tracks as there are grades of coal produced in a breaker, and as many chutes into the cars as are necessary to load every grade simultaneously.

After the "bony" coal passes through the crushers and is broken up, it joins the procession of unseparated slate and coal down the several chutes. At one place it runs through a centrifugal slate picker, which is a striking contrivance that does the work of a jig in another type of breaker.

There are dry breakers and wet ones, but this has no reference to the presence or absence of prohibition. Dry breakers are those where the coal comes from the mine fairly clean and goes through the breaker without being watered, either for the suppression of dust or for the washing of the coal.

Also, there are breakers which separate the slate and culm from the coal by jigs rather than by centrifugal pickers. In these the coal as it comes from the mine is "jigged" up and down in water. The coal settles more slowly than the slate and culm and can therefore be skimmed off like cream from milk.

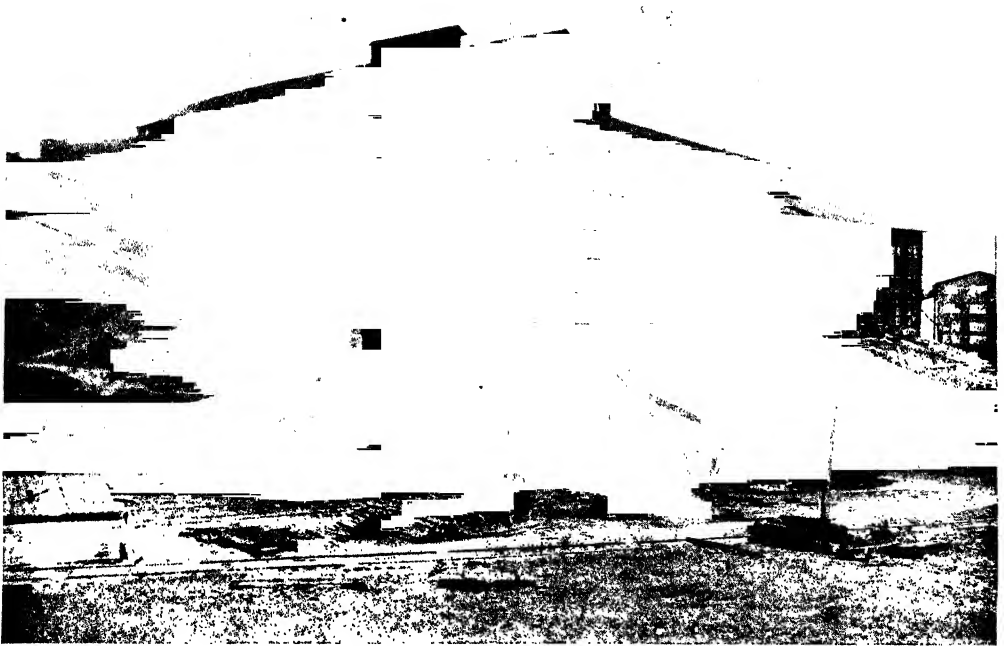
In order that the miners may not be



Photograph by J. Horgan, Jr.

INCLINED-PLANE ELEVATOR OF AN ANTHRACITE BREAKER

When the loaded cars are brought out of the mine they drift by gravity to an inclined plane. There a "barney," attached to a cable, pushes them to the top of the breaker, where the coal is dumped. Then the cable is reversed and the barney acts as a brake in returning the cars to the bottom of the incline.



Photograph by J. Horgan, Jr.

ONE OF THE LARGEST COAL BREAKERS IN THE WORLD: KINGSTON, PA.

The coal comes in at the rear of the breaker, on the top-story level. It wanders this way and that, first down this story and then the next, finally reaching the bottom minus its slate and dirt and separated into every size, from "broken" to "buckwheat."

tempted to load too great a proportion of slate, there is a "court-house" at every breaker. The men are normally allowed 7 per cent for slate, but sometimes, when in a hurry to get a car loaded, they throw in a larger proportion of refuse.

But they never know when one of their cars is going into the "court-house." This is a side track where an inspector examines the coal to see whether it is running to the proper percentages or not. If he finds that the miner has loaded too much slate, the latter is asked to take a day off. Two or three offenses result in a discharge.

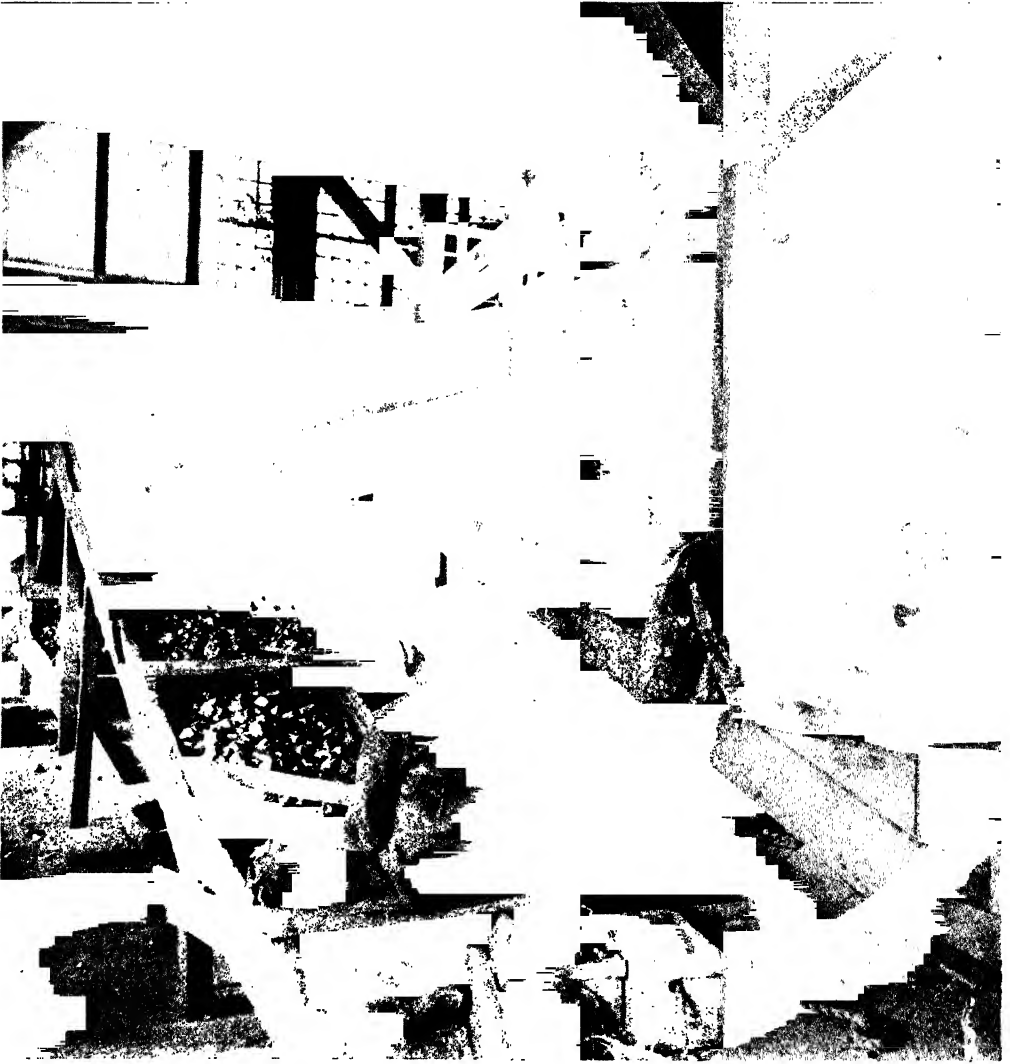
HANDLING BITUMINOUS COAL

Handling bituminous coal after it leaves the mine is a much simpler process. Often it is sold as run-of-the-mine, in which case the mine cars are simply run up to the top of a building called the tippie, tipped over, and their contents

dumped into a chute that leads to the railroad cars on the track below.

If it is not shipped as run-of-the-mine, it is graded over a series of bar screens into lump, nut, and slack, each grade going into its own pocket ready to fall by gravity into the railroad car. Some of the bituminous tipples are large and elaborate affairs, capable of separating many thousands of tons of coal a day and loading it ready for shipment.

Were space at hand, one might tell of the great culm banks that are being made to give up their coal; of the coal being dredged out of the rivers of the anthracite region, which was deposited there through decades of freshets and floods; of the superstitions of the miners, as, for instance, the dread of the white mule, which is harmless if the miner detects its ghostly approach, but certain to inflict a mortal bite if it is able to steal up unobserved.



Photograph by J. Horgan, J.

SLATE PICKERS AT WORK IN A SCRANTON BREAKER

The coal burned in the household grate had to "shoot the chutes" of a breaker before it was ready for use. After the mechanical slate pickers have finished their work, the coal is distributed to various chutes according to size and then hand picking takes out the slate that still remains with the coal.

But having seen the coal mined, brought to the surface, and put through breaker or tippie, it will be well to follow that coal to the market, and for that purpose we will watch the Jersey Central gathering the loaded cars from the Lehigh & Wilkes-Barre collieries, which it owns through stock control, and moving them to market.

A number of engines are busy all day

long collecting the cars from the several collieries. These they move up to Ashley, at the foot of the Wilkes-Barre Mountain. From this point they are dragged to the summit by a series of three inclined planes and cableways.

Safely at the top, twelve miles from Ashley by rail, but only a few thousand feet by incline, the cars are released and roll by gravity down to Penobscot yards,



Photograph by Heyl & Patterson

SLATE PICKERS AT WORK

Moving by on an endless apron, hour after hour, the coal is looked over by the pickers, whose duty it is to take out every piece of slate. It is wonderful how well trained their eyes become.

just over the brow of the mountain. Here, with much switching, a train is made up and you think it is starting on a straight run for market.

But that is a mistake. The train will run only as far as Mauch Chunk, 27 miles away. Here it will go into the yards, behind great accumulations of other cars. There is more switching; and some time, maybe the next day, maybe several days later, these cars are put into other trains and started to tidewater. There they go into yards again and more switching takes place, with road engines idle while yard engineers work.

Why coal trains must be made up, broken up, made up, and broken up again, amid all the confusion and congestion of crowded freight yards, instead of being so made up at the point of origin, that all lost motion may be dispensed with, well may puzzle the uninitiated.

Under even a headway of twelve miles

an hour, a coal train ought to run from Wilkes-Barre and Scranton to New York in eleven hours; and yet cars are oftentimes many days wending their way through congested yards to their destination. They spend from two to ten hours in yards where they spend one rolling to market.

THE CREATION OF COAL

Having seen the harvest in the coal field, let us turn to the seed time. Millions of years ago Nature stored away billions of tons of coal for us, and then left us a record of her processes written in a language that all ages and tongues can understand. It is a story so wonderful as almost to defy belief, and yet one so plain to him who reads it as to defy unbelief.

Under every seam of coal there is a bed of clay, and in this clay may be seen petrified stumps and roots with the trees they supported shooting up through the



Photograph by J. Horgan, Jr.

BREAKER BOYS AT LUNCH TIME

In the days before child-labor laws began to mean something, such youngsters as these spent most of the years of their minority in the breakers picking slate. But now they are in school and older boys and men must do the work. But at that, many a breaker-boy of the past is now a successful business man.

coal itself and through the slate above. With this evidence, can it be doubted that trees grew in the coal-forming age? And when you find petrified ferns and shells above and below the coal, and evidences of them in the coal when placed under a powerful microscope, can you doubt that plants were existent, or that there was animal life on the earth in that era!

And when you discover sandstone and slate placed in exactly the same position as sand and silt deposited by rivers upon the floor of the continental shelves of the sea, can you doubt that this sandstone and slate were once sand and silt submerged beneath the sea, especially since you find the remains of all sorts of sea life in them?

And, furthermore, when you find above

the seam of coal and its overlying strata another bed of clay, another seam of coal, and other overlying strata, and above them still another series, and yet another, until there are as many as eighteen seams of coal, with their attendant strata of clay and slate and sandstone, is it possible for us to interpret Nature's message otherwise than that there were eighteen risings and sinkings above and beneath the waves, eighteen crops of carbonaceous materials gathered, garnered, and carbonized for our benefit?

Yet these are but a few outstanding passages in the amazing story Nature has written for the seeker after the truth of the geological story of coal. Those who are able to understand the sermons that



Photograph by Earle Harrison

NATIVE MOUNTAIN WOMEN COME FROM MILES AROUND TO THE COMPANY COMMISSARY TO TRADE: MONEY IS RARELY USED, AS THEY GIVE FOR MERCHANDISE BUTTER, EGGS, AND CHICKENS

the great Author has written in the rocks, and to translate the books that He has compiled in the running brooks, find the wonderful story of earth history told in twelve great chapters representing as many eras in geological time.

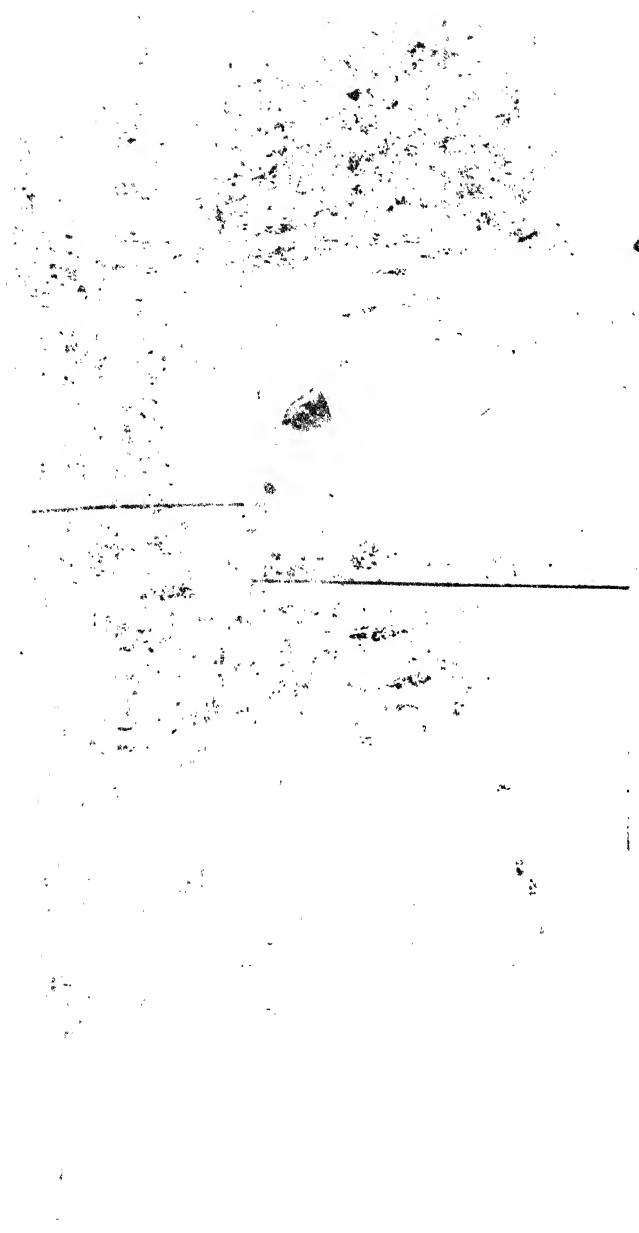
As we descend the coal-mine shaft, we begin to leaf backward in the great book of Nature. The first chapter we come to is the last one in the book, and it begins with the advent of man on the earth. Next to that is the chapter which gives the story of the age of mammals. It takes the two chapters beyond this to tell us the story of the age of reptiles. Then we come to the fifth chapter from the end, or the seventh from the beginning,

and it tells us the remarkable story of coal.

In thus leafing backward in the book of the ages, as we descend the shaft, we scan millions of years of geological history.

The chapter which tells us of the coal age is an amazing account of a wonderful time. We find that there were many kinds of fishes existing in those times, but that there are few evidences of other than gill-breathing creatures upon the earth. Not a single specimen of animal life of that era has survived to this time, but there was a vegetation of unbelievable abundance and size.

Many of the plants which existed then were plainly the ancestors of plants



Photograph by J. Morgan, Jr.

A COAL VEIN THAT YIELDS SOME TWO THOUSAND TONS TO THE ACRE

When it is realized that the densest forest that living man has ever seen would make a coal seam less than an inch thick, the tremendous amount of vegetation required to make this ten-foot seam can be realized. Who can appreciate the majesty of the Creator of all things so well as those who can read Nature's account of the wonderful processes of creation! (see text, pages 423, 425, 428).

PETRIFIED TREE STUMP IN THE CORK AND BOTTLE MINE, SCRANTON, PA.

© J. Horgan, Jr.

This is a tiny paragraph from the chapter on carbon in the great Book of Nature. It is a volume compressed into a sentence in picturing the story of the formation of the coal we burn. Could every man go down into a deep mine and there read of the painstaking processes by which a bountiful Mother Nature so richly provided for us, there would be a fuller appreciation of the genial miracle-working heat which is coaxed from coal.



Photograph by J. Horgan, Jr.

CHEMICAL FIRE-FIGHTING APPARATUS FOR MINE PROTECTION

Every precaution is taken to protect mines from fire disaster. In the Carbondale country of the anthracite area there is a mine that has been burning for years. It has never been found possible to check the flames. Occasionally there are cave-ins which startlingly suggest the bottomless pit. Restoring a mine after a serious fire is often a matter of years.

which live today, but the survivors are pigmies, measured by the giant statures of their antediluvian ancestors. Trees that rose to a height of fifty feet and possessed trunks two or three feet in diameter are now represented by plants with stems a fraction of an inch in circumference and a foot or so high.

AMAZING COAL-AGE VEGETATION

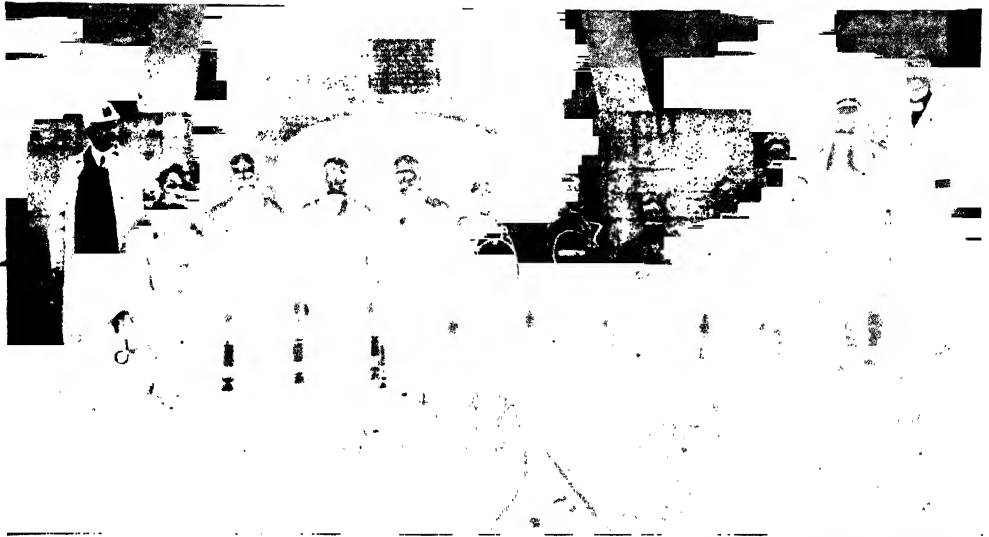
Nor was the difference in luxuriance as compared with today less great than the difference in size. There was the great lepidodendron, a club moss which grew from forty to fifty feet high; its largest existing descendant reaches a height of not more than three feet. There was the sphenopteris, a giant fern raising its head like a palm tree; there were the calomites, cousin of the modern horsetail, which grew in dense jungles; and there were even grasses which grew to the

height of a forest of twenty years' growth.

Perhaps the most striking of all coal-age vegetation was the beautiful sigillaria, a monarch of the carboniferous forests, whose trunk often swelled to five feet in diameter and possessed a bark that seemed studded with sealing-wax impressions.

In a single mine in England thirty of these trees were found standing in their natural position in an area fifty yards square, the wood of each petrified and the bark turned to coal. In some cannel-coal mines whole trees have been found, with roots, branches, leaves, and seeds complete, all converted into the same quality of coal as that surrounding them.

Those were happy days in the vegetable kingdom. Plant life was quickened as animal life is stirred by the ozone of the sea, for the air was laden with unim-



Photograph from U. S. Bureau of Mines

EQUIPPED FOR RESCUE WORK IN COAL-MINE DISASTERS

It would be difficult to overestimate the value of the work of the United States Bureau of Mines in the improvement of methods for the prevention of mine disasters and in rescue operations in the accidents that, in spite of every precaution, still occur. Modern appliances and quick mobilization of rescue forces have saved thousands of lives in the industry.

aginate supplies of carbonic acid gas, which was inhaled by the Brobdingnagian jungle.

Indeed, so rich was the atmosphere in its supply of this gas that while it made vegetation grow extraordinarily rank it would have suffocated man. Furthermore, there was warmth exceeding anything we know in the tropics today, and there was moisture in abundance—more than the most spendthrift of plants could wish for.

The vegetation of that time was not limited by zones, neither by continents. In the coal beds of Alaska, in the measures of the Antarctic, or in the mines of Australia, Europe, Asia, or America—in them all one finds evidences that the five hundred specimens of plants of that era, preserved by Nature for our inspection, acknowledged no climatic zone nor found themselves limited by any ocean.

How amazingly dense was the vegetation of the coal-forming era may be shown by comparisons with existing forests. The densest jungle I have ever seen is that lying along the Motago River, in Guatemala, and men who have traveled in every tropical land of the earth say that

they have never seen anything surpassing it.

Should Nature, by the processes of the coal age transform that jungle into a coal seam, it would be only a few inches thick; yet there are coal seams existing today which are sixty feet thick, though ten feet is regarded as a fine seam, and three feet will produce more than five thousand tons to the acre.

THE FAMILY-TREE OF COAL

It is interesting in passing to note the family-tree of coal. Wood contains some 50 per cent of carbon. As dense forests have decayed they have left peat beds behind them. Subjected to the pressure of superincumbent strata, and touched slightly with the internal heat of the earth, peat becomes lignite, and we can see peat so near to being lignite and lignite so near to being peat that the line of demarcation is hard to draw.

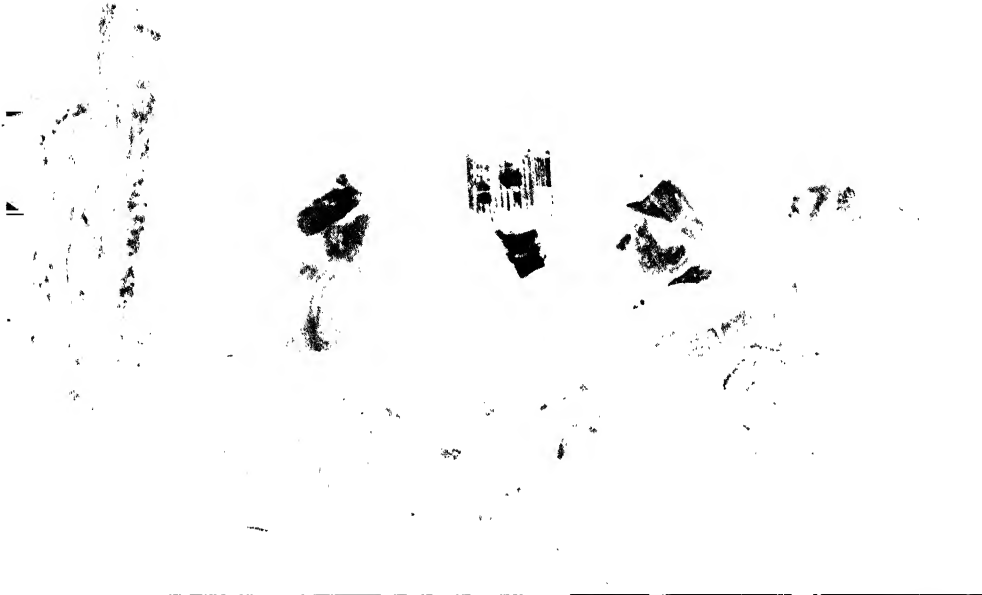
After lignite comes cannel coal, the connecting link between lignite and bituminous coal. Bituminous coal contains approximately 88 per cent of carbon as compared with 67 per cent in lignite and 84 per cent in cannel coal. Anthracite



Photograph from U. S. Bureau of Mines

FATEFUL HOURS AT A MINE SHAFT

Who can adequately picture the anguish of soul and the suspense of waiting of these women and children called to the mouth of a mine by news of an explosion that has entombed, if not incinerated, husband, father, and brother down in the cavernous depths? Dark and silent, standing like a flock of frightened sheep, there is no shrieking of women, no struggling of frenzied mothers. But the, is that awful, tearless, patient silence such as only the dismal dread of a mine disaster can awaken.



Photograph from U. S. Bureau of Mines

A TINY GUARDIAN OF THE MINER'S WELFARE

As susceptible as men are to the overwhelming effects of mine gases, the canary bird is much more so. The result is that in many disasters the birds are made the outposts of the invading army of restoration. They are overcome long before man can detect the presence of the gas and therefore warn the men of the dangers ahead.

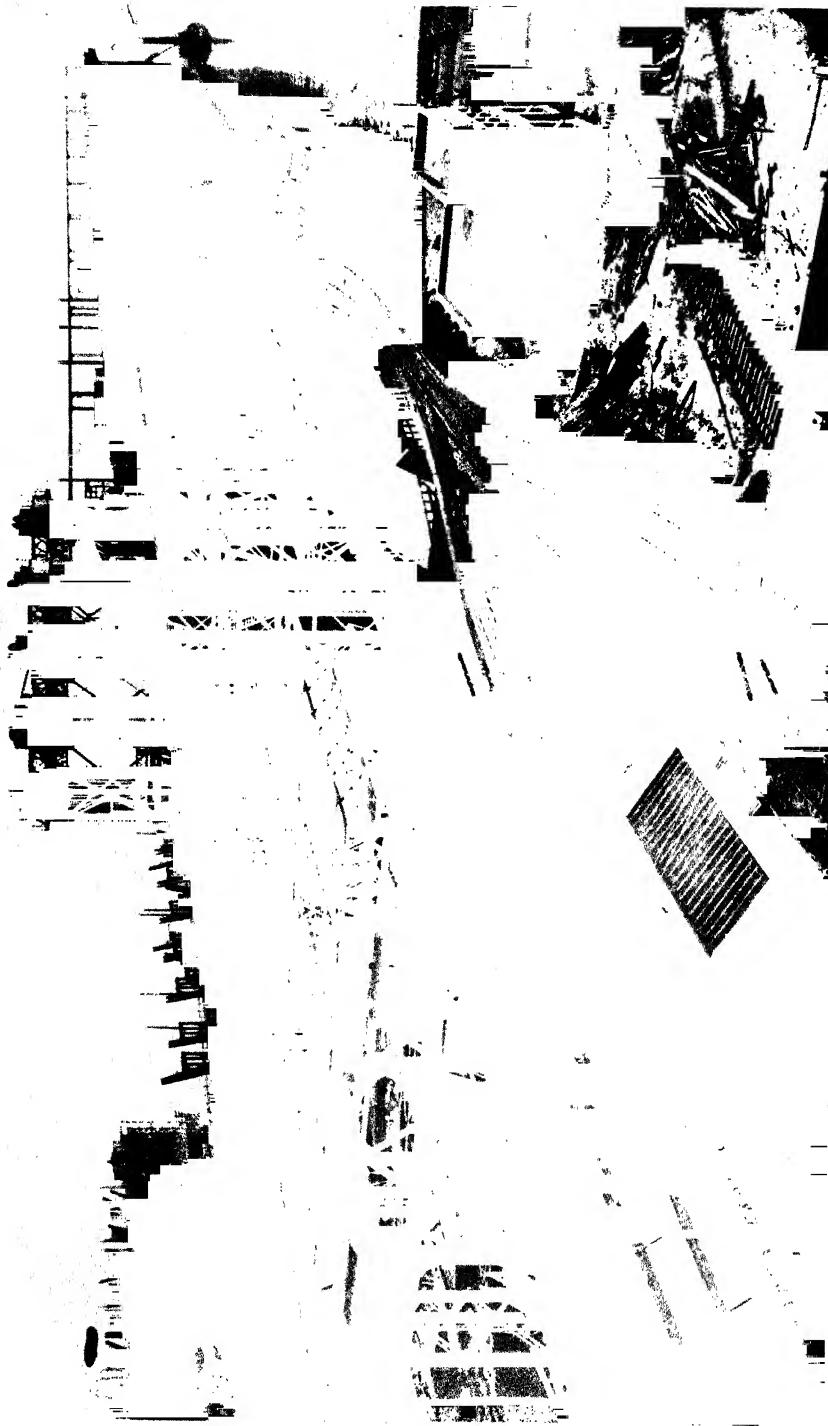
goes still higher in carbon, with 93 to 97 per cent. Then comes graphite, with still more carbon, and finally the diamond.

Here again Nature has shown us how she made the different kinds of coal. Occasionally in a bituminous bed we come across a little section of anthracite, and always there is basalt accompanying it. In some great volcanic eruption liquid lava was thrown out and it ran over the bituminous coal, driving out, by its intense heat, exactly as the coking process does, most of the volatile matter and transforming the bituminous coal into coke, which under great pressure hardened into anthracite.

Again, if anthracite or coke be subjected to the heat of an electric furnace, as it is by the abrasive manufacturers at Niagara Falls, it becomes an impalpable black powder. So, also, in the earth do

we find places where anthracite underwent such intense heat that even the little gas it contained could not resist expulsion, with the result that the anthracite became graphite, which is widely mined and which the world uses alike for lubricating machinery, making lead pencils, polishing stoves, and shining shoes.

That the diamond, the head of the carbon household, was formed in the presence of iron, under tremendous pressure, was a theory arrived at by M. Henri Moisson, an eminent French chemist. Analyzing a great number of small stones, he found always a trace of iron present. He held that molten iron, cooling in the presence of carbon deep in volcanic depths, where there was little elbow room for it to undergo expansion in assuming a solid form, would exert a tremendous pressure upon the particles of carbon it



Photograph from Wellman-Seaver-Morgan Company

COAL PIERS AT NEWPORT NEWS, VA.

In the handling of coal one of the principal difficulties is the lack of storage facilities. Neither at the mines nor at the terminals is there provision for reserves. The mines cannot produce any more coal in any given day than the railroads can provide cars for its removal. Nor can the railroads haul more coal in a given day than the ultimate consumer can use. The result is that there is no real reservoir at either end, and the industry always has a hand-to-mouth existence. If storage facilities for coal, such as are used in the iron-ore trade, could be utilized the industry could better adjust itself to the working of the law of supply and demand. Some of the newer coal-ag plans can load 2,000 tons of coal into the hold of a ship in an hour. When it is remembered that it costs \$1,000 a day to keep a 10,000-ton ship in commission, it will be seen how important loading and unloading operations are.



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A SNOW-COVERED DOUBLE LEADER AT THE END OF A RUN

A very cold and snowy winter at all times presents to the railroader a situation that a layman sitting before a warm fire or impatiently waiting for his coal bin to be filled can little appreciate. When transportation facilities are taxed beyond their limit, conditions such as prevailed last winter involve difficulties and trials for train crews that would discourage the most indomitable.

absorbed, and that these would thereupon assume the crystalline form.

He decided to attempt a duplication of the process. Packing a cylinder of soft iron with the carbon of sugar, he placed the whole in a crucible filled with molten iron, which was raised to a temperature of 3,000 degrees by means of an electric furnace. The soft cylinder melted and dissolved a large portion of the carbon. The crucible was thrown into water and a mass of solid iron was formed. It was allowed further to cool in the open air, but the expansion which the iron would have undergone on cooling was checked by the crucible which contained it. The result was a tremendous pressure. Opening up the crucible Moisson found his theory correct. He had duplicated Nature's process in a small way and had achieved Nature's results.

SUBJECTS UNTOUCHED

Thus we see that the difference between peat and diamonds is only a difference in degree of heat and pressure applied to carbon in geological ages gone by, and the marvelous story of coal links the beautiful ferns and the stifling car-

bonized atmosphere of millions of years ago to the scintillating diamond and the dark mine of the living present.

One fain would let his enthusiasm outpace his judgment with such an inspiring story to chronicle and write a book rather than an article, for there is so much that remains untold. The picture of the world before coal was utilized remains undrawn; the vastness of coal beds of this earth and their influence upon nations and peoples remain unappraised; the history of coal utilization remains unwritten; the need of coal conservation and the inefficiency of modern engines, which waste from 85 to 95 per cent of the energy in the coal they use, remain undiscussed; the life of the miner and the heritage he bequeathes to humanity have been barely mentioned.

These and many other phases of the thrilling story of King Coal and his beneficent reign upon the earth must be passed over. Sitting by a warm fireside, reading a favorite magazine, how little we reckon all the ramifications of the wonder tale of the seed-time and harvest and utilization of Nature's great gift of heat and energy to man!

THE SPIRIT OF THE GEOGRAPHIC

IT IS a stimulating privilege to see into the heart of a generous, sympathetic, and patriotic people. Such a privilege has been the rich experience of the Board of Managers of the National Geographic Society since an announcement, first appearing in the pages of the GEOGRAPHIC some months ago, invited the members of the Society to contribute to a fund for the establishment of a Geographic Ward in American Military Hospital No. 1 (then the American Ambulance Hospital), at Neuilly, a suburb of Paris.

That two wards have been established instead of one and twenty beds are now being supported instead of ten, as originally contemplated, is tremendously gratifying; but far more significant and inspiring than this fact has been the tender

spirit of solicitude and often of self-sacrifice reflected in every contribution for this noble cause.

From every quarter of America and from members in distant parts of the world the response has come. The membership, in spite of the extraordinary demands made upon them for the support of Liberty Loans, Red Cross and War Service Community drives, and the expanded needs of their local charities, have yet found the occasion and the means to subscribe generously toward this fund for the care and comfort of our wounded boys in these Geographic wards.

Even more moving has been the response of those whose contributions have been made at the expense of personal privation, and how beautiful has been the tribute of those who have given not only

money, but the fruits of their individual industry.

ORPHANS SEND THEIR PENNIES TO PROVIDE A TREAT FOR THE WOUNDED

Whereas a "fellow-feeling makes one wondrous kind," suffering and sorrow make us supremely sympathetic, as attested by the following letter to the Editor received from Mrs. Cynthia A. Mann, secretary of the Children's Home Finding and Aid Society of Idaho, at Boise:

"I saw in the July number of the GEOGRAPHIC MAGAZINE that your Society had two wards in American Military Hospital No. 1, Neuilly, France, and that it cost \$600 a year for a bed without any extras. I want to do all possible in my little way and encourage the unfortunate wards in my charge (I am teacher in our orphans' home). I paid them for pulling weeds, and they saved their pennies and earned nearly \$4.00. I told them we would send \$10 for an ice-cream treat; and I wish to feel that I have maintained a bed for at least ten days, so please find enclosed a draft for \$26.50. Please be sure of the *treat*, for our little ones feel that they worked very hard. Two of them blistered their hands. We weighed the weeds; one little 9-year-old pulled 25 pounds and earned 50 cents. Some under 6 years pulled a pound.

"If the boys Over There could know of this love and ardor of their affection they would enjoy the treat doubly. I have made four scrap-books, which every one pronounces very interesting, and I spent much time, thought, and labor to make them worth while for the entertainment of our dear lads while in hospital. Wit, humor, patriotism, sentiment, valor, devotion to home, country, and truth are illustrated by picture and story. Some old, old gems; others new, grown out of the times. I wish to send these to your wards. How can this be done? Would you be kind enough to write me. I wish we might hear from some of the patients. It would be a great day in *The Children's Home*. And what a memory to have for all time, 'We sent the soldier boys a treat and they sent us word they got it and it was fine.'"

TRUE SERVICE BY COLLEGE GIRLS

At the opening of the autumn term of Flora Macdonald College, Red Springs, N. C., the president, Mr. C. G. Vardell, wrote to the Society saying that the faculty and student body had read with deep interest Carol Corey's article, "A Day in the Geographic Wards," and that they would like to support a bed in one of them. He added that the young lady students, instead of taking the amount from their allowance, proposed to earn the money by doing the work around the college which housemaids had been doing, and thus show the real spirit of their purpose. In reply to a letter heartily approving the plan, Mr. Vardell wrote, on September 25:

"Your very kind letter of the 21st has been received. I read it to my student body last night and they received it with tumultuous applause. They are gladly doing this service, and I call it *real* war service.

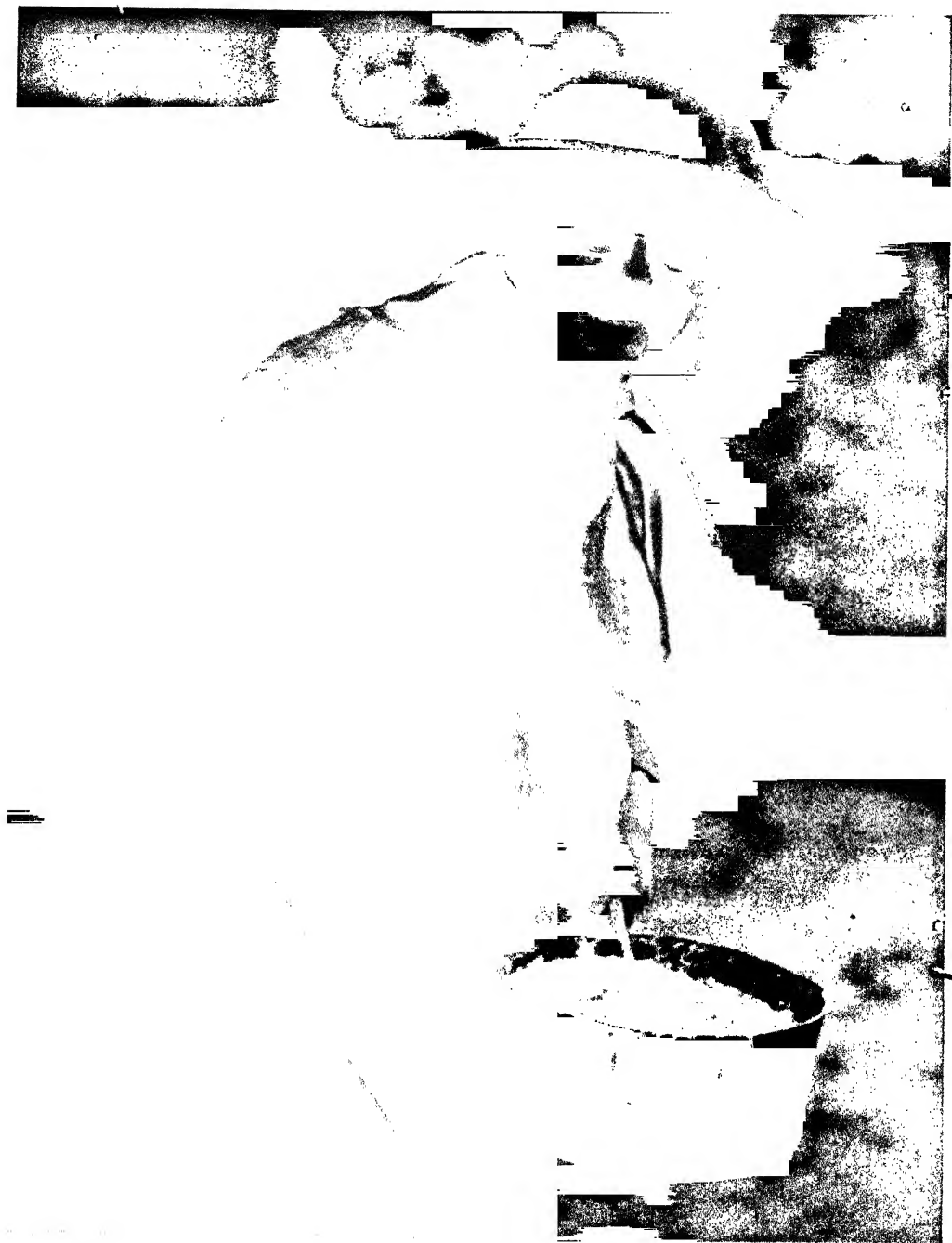
"How shall we remit the money to you? Once a month, if you say so. If possible, the students would like a small, inscribed placard at the head of the bed. Will they be allowed to make scrap-books and provide small things especially for that bed? They want it to be just the best bed that ever was spread in any hospital and are prepared to do all they can to make it qualify as such."

The remittance has been coming to the Society regularly on the first of each month, and over one of the beds in the Geographic wards there is framed today a neatly printed legend, reading:

BED MAINTAINED BY
FLORA MACDONALD COLLEGE

THE TRIBUTE OF AGE TO SACRIFICING YOUTH

Pathos, industry, devotion to our country's cause and to our soldiers' needs are reflected in the many letters which have accompanied contributions of afghans, pillows, pajamas, bathrobes, slippers, comfort bags, and many other useful articles for the equipment of the wards and to convey a touch of "home" to the youths who are suffering from nostalgia as well as bodily pain in a foreign land.



THE MOTHER OF THE REGIMENT

A famous English poet has pointed out that we may live without poetry, music, and art, but "civilized man cannot live without cooks." Ask an American doughboy if life would have been worth living at the front without the Salvation Army cook, comforter, and general utility cheerer. That this noble servitor for the American soldier is doing her all under fire is attested by the fact that she is wearing her shrapnel sombrero, and the only jewelry which adorns her person is the "bracelet" of her identification disk.

Here is a typical letter from a bereaved husband in New York State: "The enclosed blanket was knitted by Mrs. —, age 70 years, while suffering from a broken ankle last winter. She desired that it be sent to France. As the National Geographic Society maintains several hospital units there, we concluded it would be proper to present it to you for one of them. Shortly after finishing the blanket Mrs. — died suddenly of heart trouble."

A short time ago there came to the Editor's desk this eye-dimming missive: "It is not much I can do, as I cannot afford to, as I am a Civil War veteran's widow. But I want to do anything I can for our dear boys who have shown their love of country and their loyalty, too. I am 81 years old. I hope you will like the wash-cloths. I have never knit anything before. If I can do anything else, please let me know."

Here, indeed, is inspiration for another parable of the Widow's Mite.

And, at the other end of life's scale, the day's mail brings a package of towels, comfort bags, and one wash-cloth knitted by the eight-year old daughter of a Vermont mother whose son is in the army.

From New Orleans there comes a "happiness quilt," with a letter which adds, "If you want more such quilts for our convalescents, all right, you will get them; for, when off duty, as a lawyer (a woman), I can knit and, better yet, I have lots of friends I can press into service."

A HERO OF 1861 KNITS FOR THE HEROES OF 1918

From Springfield, Mass., comes the following: "I am writing you in the interest of my father, —, who has been a subscriber to the NATIONAL GEOGRAPHIC MAGAZINE for some time. We recently read in one of the issues an article on a Paris hospital, two rooms of which are furnished by the Geographic Society for the benefit of American soldiers. My father is 85 years old, a G. A. R. man, and his grandsons—my three boys—are now in the service, two of them in France. He has been for the past year industriously knitting, until now

he has completed two afghans, which he very much desires should be sent to that very hospital in which you are interested."

Comfort bags, made and filled by mothers of Annapolis graduates during June week; six afghans, knitted by the young ladies employed in the headquarters of the National Geographic Society; comfort bags, designed as Christmas gifts for each boy occupying a bed in the Geographic Wards; scrap-books from Camp Fire Girls; an afghan from Cuba; boxes of sheets, pillows, and other supplies from many women's clubs; two great boxes of hospital supplies from the women of Ohio; afghans knitted in small squares by the school children of many States—these are some of the contributions which have flowed into these offices continuously since the first announcement of the need for them, and will continue to be received, for that need is not yet satisfied, with tens of thousands of wounded men still in France.

Not all of the contributions have come through the mails. A few mornings ago there called at the editorial offices of the Society a matron in whose eyes tears gleamed as she confessed that her health was such that her efforts to assist in Red Cross work had proved futile. "All I can do is give," she added. "My son enlisted in the British army before America entered the war, but he has since been transferred to our own expeditionary forces, and I want to feel that I have aided in giving comfort to some one of his associates who may be stricken on the firing line. Will you allow me to endow one bed in one of the Geographic Wards for a year? I would like to contribute, in addition to the \$600 for the support of that bed, \$5 a month to buy the 'extras'—fruits, chocolates, and 'smokes'—which Mrs. Corey mentioned in her account of her visit to the wards."

YOUR PERSONAL INTEREST DESIRED

Thus have members of the National Geographic Society responded to an opportunity afforded them to establish a direct personal bond with the men who have suffered for us Over There, while we have endeavored to sustain them and our common cause Over Here.



MUNITIONS MAKERS IN THE FRONT LINE TRENCHES

Not the ordinary kind of high explosive :hell and machine-gun bullet, but the kind that put "pep" into the American soldier in his battles with the Hun. Here is a typical pie "factory" conducted by Salvation Army workers.



THERE WAS NO PLACE WHICH RADIATED THE SPIRIT OF HOME FOR THE BOYS AT THE FRONT MORE EFFECTUALLY THAN THE SALVATION ARMY KITCHEN

The distribution of doughnuts was invariably accompanied by something less tangible but infinitely more important in the maintenance of morale—a smile and word of good cheer. The little demons of homesickness fought a losing fight whenever they came in conflict with the spirit of cheeriness which was always in evidence in the presence of a Salvation Army lassie.

